Codex (Egham) Press Limited
10 Willson Road, Egham, Surrey TW20 0QB
Egham (0784) 39208/34630

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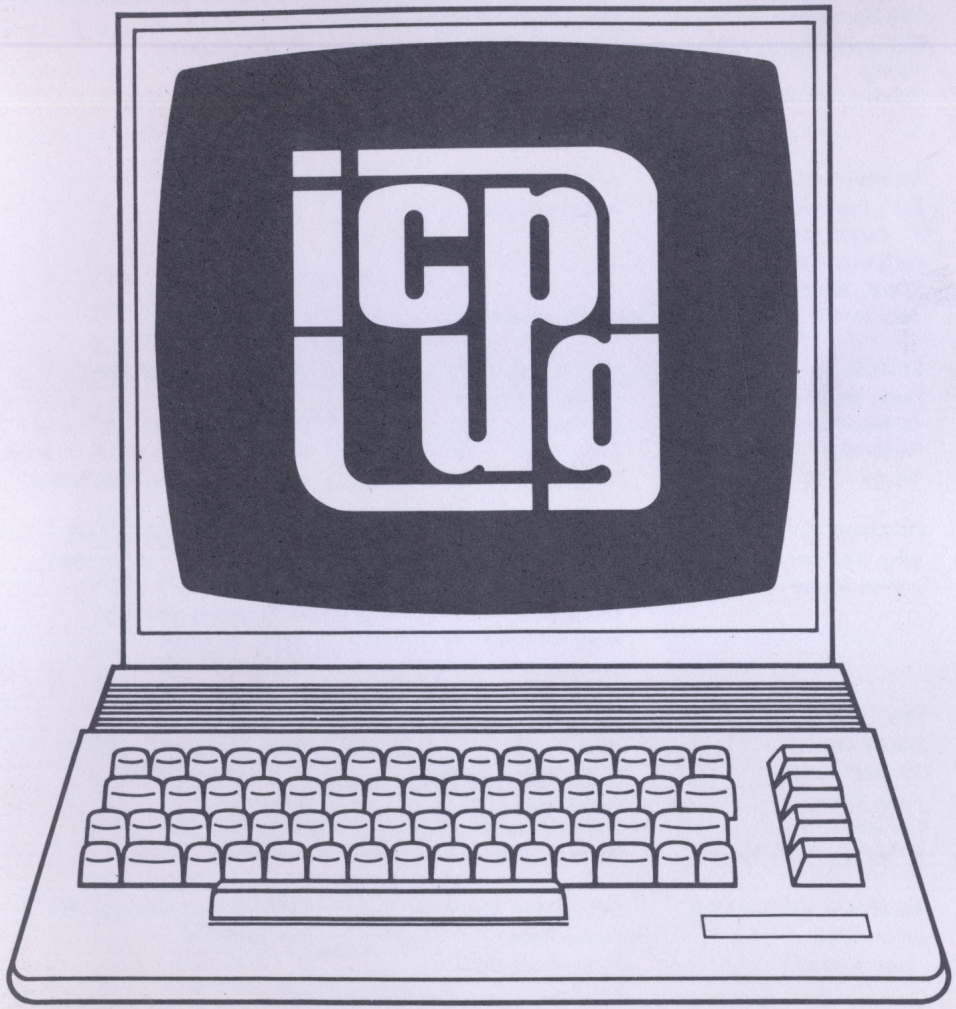

Europe's first independent magazine for CBM users

Volume 9 May/Jun 1987 Number 3

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INDEPENDENT COMMODORE PRODUCTS USERS GROUP
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EDITORS' NOTEBOOK

Time marches on! The AGM has taken place, and while you must wait until the next issue for a full report and the list of all the new office-holders, we can tell you that after just on 4 years the present editors are laying down their pens after the next issue and handing over to an unsuspecting triumvirate of new blood.

The LaserJet+ from H-P has arrived, as is evident the moment you turned past the Contents page; our Chairman tells all - well, almost all - about it in his 'Jottings'. It was not ready for us to reproduce the whole issue on but, plainly, he could not resist producing a foretaste of how beautiful it is all going to be when the Laser takes over completely from my old Qume Sprint V, not that this has not served us well for 4 years. Jim did include a footnote that absolved us of any responsibility for his 'copy' this month. This had to be cut out, but please note that the laser-printed sections of this issue were not subject to editorial correction or control.

We have an interesting article (p220) for business members, a remarkable realisation of accounting for a small business in Superscript. Particularly interesting is the fact that it derives everything from the basic Day Book entries, so full analyses can be obtained at any time, unlike professional accounting programs in which, after a fully detailed printout initially, later analyses can only provide summarized information. The program is a tribute both to Pete Miles's programming skill and to the power of Superscript and its macros.

Greg Perry's article from Australia (p236), which actually provides a program to demonstrate the '1571 bug', is also of considerable interest. It is a pity it was not to hand at the time when UK Commodore Management (since changed) was foolishly denying the bug's existence.

It was the happy arrival of such interesting extra material (plus giving the Chairman his head) that has enabled us to fill out an issue without the help of two of our regulars. And talking of contributions, please note that the next issue has to be complete by June 28 or it will not appear until September! Our member-printer is off to commune with other world Esperantists in Poland in July and will be closing his press early in July for a month.

Since we have to wrestle with a new WP program and the LaserJet for the next issue, we need copy as early as possible, at latest by June 21 and with, as usual, as much as possible already on disk. So out with your pens - we would like our last issue to be a whopper.

HdeG
HGV

JIM'S JOTTINGS

by Jim Kennedy

Our New Look

Well here it is, the first preview of the new Newsletter format using VizaWrite Classic on a 128 printing camera ready copy out on a Hewlett-Packard LaserJet printer. You may note this comes at the same time as BYTE has as its theme Desktop Publishing (May 87). A printing and publishing revolution is upon us.

A lot of things are involved with this changeover from our old PETs, Wordcraft and a daisywheel printer. First, Hewlett-Packard (HP) loaned ICPUG a LaserJet printer which VizaWrite (VW) Classic 128 supports. The HP LaserJet has two built-in, fixed space fonts very much like typewriter fonts. But they also make a range of font cartridges with additional spaced fonts. Their very popular F font cartridge has six fonts, five proportionally spaced and one fixed space.

However, we at ICPUG (well actually our intrepid editor Hugh de Glanville) decided that the U font cartridge offered a better selection of fonts. So we purchased it. Alas, there was no printer profile for it. Amongst other things a printer profile is necessary to tell the printer how wide each character is in each of its five proportional spaced fonts. (The two fixed space fonts don't need this information passed to the printer.) For instance, the letter M is wider than the letter I and and the printer must be told these measures quite precisely. If not then the letters in a word wouldn't look right next to each other and the lines wouldn't end up aligned at both the right and left side of the paper.

So Hugh obtained from HP a disks with all their various font cartridge data. Next, Leslie Jarret, one of your new editorial team, took the disks (in IBM MS-DOS format) and printed out 70+ pages of font data. Finally, Leslie and myself sat down one night and wrote the U font cartridge profile. This involved lots of tedious keying in of figures (thousands of numbers) but after much experimentation everything worked right. I also wanted to be able to get the 128 and the LaserJet talking to each other at 19200 baud rather than the 9600 baud which the LaserJet came set at. A phone call to Viza Software solved that problem.

The result is as you see here. We think it a more professional looking product; better than the results from a daisywheel or dot-matrix printer. It will also be a little cheaper as we don't have to pay for page make-up services. Meanwhile, if any members want a U Font profile for VW to drive the HP LaserJet send me a formatted disk with reuseable mailer, label, postage etc. The F font profile comes with VW.

And I know I speak on behalf of all our members and readers when I say thank you to Hewlett-Packard for the long term loan of their LaserJet printer. We

hope to be using it for some time to come as most of the desktop publishing packages now coming out for the Amiga will support the HP LaserJet protocols. If we convert to that machine so as to obtain better graphic output the LaserJet can cope. We also wish to thank Viza Software for furnishing us VizaWrite Classic 128. The next Newsletter should be entirely written with our new system.

1571 Bug Update

We have some very good and quite interesting contributions in this issue and one of the most outstanding ones comes from Dr. Greg Perry, Ashgrove, Queensland - you know the place - Down Under, where Crocodile Dundee and other 'Sports' hang out. And what a good contribution Greg's turned out to be! He has tracked down the conditions under which the 1571 bug strikes. In a nutshell, "Data corruption on a 1571 disk WILL occur when one relative file and one sequential file OR when three sequential files are open at the same time AND the new file is being written to side two of the disk". This implies that the bug can strike when writing to the back of the disk when three channels are open - a relative file has two open whilst a sequential file has one. Greg's complete article appears elsewhere in this issue and, if you use a 1571 disk drive, read it! Greg gets my vote for the computer version of the Sherlock Holmes of the Year Award and deserves the deepest thanks from all 1571 owners for the Job Well Done Sport accolade.

In the same vein, there have been new EPROMs (ie. post version 3) for the 1571 drive developed. Unfortunately, while using Greg's program, they still don't work properly. Apparently another problem was introduced due to a change of disk drive by CBM. Of course the version 3 EPROMs, which I tested last year, didn't work properly either. Meanwhile, CBM UK tells me that they hope replacement ROMs (version 5 or 6 maybe?) for the 1571 will be available in a couple of months.

Also there is still no word on what channels the new ROMs will be issued through or how they will be installed. We will let all readers know as soon as we receive any more information. (By the way, don't treat the number on your current 128 or 1571 ROMs as part of the same sequence of numbers as we discuss here. These development version numbers have become separated from the production versions; it's a long story.)

DPS 1101 Printer

A reminder, if any of you have a DPS 1101 daisywheel printer and experience problems with disk backups or other strange behaviour, one of the first things to do is disconnect the printer from the rest of the system. There is a bug in the DPS 1101 which sometimes interferes with other operations on the CBM serial bus. This machine also possesses a couple of other, somewhat minor, bugs.

First, the one Joe Griffin wrote about, concerns the change of printwheel (see Vol 9. No 1. p 197. Mar/Apr 87). The second involves double quotes in right justified mode and causes printing to go bananas. Precision Software solved this problem with Superscript by trapping the double quote before it is sent to the printer and substitutes the following commands: print the double quote character, backspace, overprint with a second double quote character. This 'cons' the printer into thinking it is out of double quote mode so it behaves normally. The bug also strikes VizaWrite but in that package one can use two single quotes in proportionately spaced, right justified mode in lieu of the double quote. Since the proportional spacing closes up the two single quotes quite a bit the output, whilst not elegant, is passable.

2CN, 1530 and 1531 Tape Drive Problems

Commodore make tape drive units to a specific specification. Unfortunately, when the specification was developed some years ago things like turbo loaders were not on the market. Many people now find that some new fast loader tape won't load on their machine but may work on another. Unfortunately one does not have much recourse with either the retailer or Commodore. The software house that put the fast load code on the tape didn't stick to the Commodore specifications and most fast loaders require that the drive must be aligned and the heads manufactured to a much higher standard than the quality control standards call for.

If someone experiences such problems they could try a head alignment tape utility and cleaning the head. But be careful about the alignment. If your head was on the verge of going out of alignment for some reason and you realign it your old tapes may now have loading problems.

The simple test program which Commodore uses to check if its tape drives meet spec is listed below. Type it in and RUN it with your tape drive connected.

```
100 rem **** tape drive test program ********
110 save "test program",1                :rem save prog to tape
120 print "please rewind the tape"        :rem ask for rewind
130 print "then press the space bar"
140 get a$:ifa$<>" " then goto 140       :rem wait for space bar
150 verify "test program",1              :rem verify saved program
160 aa=st                                :rem store verify status
170 print aa,                            :rem prints status
180 print "test complete";                :rem   should be zero
190 if aa=0 then print "ok"              :rem ok if status = 0
200 if aa<>0 then print "failed"         :rem failed if not = 0
210 end
```

Membership and Newsletter Articles

1987 ICPUG membership now exceeds that at the end of last year. Whilst Amiga and 128 owners are responsible for much of this increase, 64 owners are still the most numerous. However PET, VIC20 and Plus 4 owners still number in the hundreds. Other machines have somewhat less visibility but bear in mind that we still welcome Newsletter articles about them. If you don't see enough articles about your favourite machine why not try writing an article yourself! We try to publish a wide variety of articles, not only for experts, but beginners as well. We don't pay for articles (but, as has been said before, neither do we charge for the privilege), We rely on members sharing their experience with other members through this Newsletter. In spite of this the ICPUG Newsletter and BYTE magazine are the two best computer journals in the world for Commodore users.

New Machines

Many new computers are coming out which are of interest to everyone. Not only are the two Amigas, the A500 and 2000, on their way, but IBM has launched their new range which use a multitasking 'new DOS' (Disk Operating System) from Microsoft Inc. This 'new DOS' is designed for 80386 chip based machines. It won't run on 8088 or 8086 chips but is said to work with most existing MS DOS software on 80286 computers. Apple launched its new Macintosh range based on 68000 series chip whilst Atari have new larger megabyte RAM STs on the way, again based on the 68000 chip just like the Amiga. The big question is, Which chip family will dominate the 1990's, the 80X86 or the 680X0?

One fly in the 80386 ointment is that many experts feel that it will be 1990 before a significant number of applications are available for it in its native 386 mode of operation (as opposed to just emulating a 286). Now the alternative multitasking UNIX system is available for 386 (as well as 68000 systems) and has been around for some time. However, UNIX was designed for larger computers run by professional programmers and ordinary users think it a first class nightmare; user friendly it is not! So in spite of announcements every other month for the past few years that UNIX is the next best thing to sex and sliced bread, it hasn't been widely accepted.

UNIX also has its Achilles heel; it is not secure against hackers. A friend of mine, another Aussie 'Sport', works with UNIX for a very large European computer manufacturer with headquarters in a country with a lot of spaghetti about. He claims to be able to break into any and all so-called 'secure UNIX system' ever developed and become what is termed a 'Superuser' within 10 minutes. A UNIX 'Superuser' can do everything and anything to the system including nasty things like reading and changing another user's password, reading and deleting protected files and erasing evidence that he was ever logged on to the system! Do you really want your local bank or building society

to use such a system whilst your balance is still in the black?

It therefore looks like the 68000 systems have some breathing space to develop and grow whilst the 80386 crowd waits for a couple of years to get up to speed, in spite of the fact that IBM is backing their horse.

Further, it is not a trivial task to port applications across from single tasking environments to a multitasking ones; multitasking is a new environment. One of the reasons for the delays in Amiga software and a major cause of complaints about programs crashing has been due to that fact. If a programmer writes code that takes over the whole machine or makes 'illegal' calls on the system whilst another package is running and probably making the same 'illegal' calls then one should expect crashes.

Consequently, many knowledgeable observers reasonably expect that reliable 80386 multitasking programs will be delayed. Meantime if the 680X0 types, and especially the Amiga and the Mac people, can produce a complete range of good reliable applications programs by the end of 1988 then Big Blue's tight hold on the business market will have been broken for good. Don't misunderstand me, IBM won't go bust. It will probably still retain a large share of the market, in part due to its past reputation and name. However, by the time 1 January 1990 rolls around the more knowledgeable microcomputer users will have discovered the power and flexibility of multitasking 68000 machines and have changed over to them.

Back in the days of the early PETs many large, technologically orientated corporations joined ICPUG. Many of them have continued their membership to the present. Again today we are now experiencing many other large and important companies taking out memberships, and in particular, those in the media, communications, graphics and design fields. The Amiga, obviously, is making quite an impact in the microcomputer world. That multitasking piece of hardware is a very useful bit of kit. Commodore appears to have got its act hardware together again. We all hope it keeps its marketing, sales and support acts in the same shape. Exciting times and many changes lie ahead of us in the next couple of years.

Delays in Member's Requests

As some of you know Mike Todd, our Amiga Librarian and Technical Coordinator was involved in a bad car crash last year and has had bouts of poor health since. Consequently, members writing to Mike may experience delays in return of their disks or information. He is catching up now but if things such as disks seem to have gone astray drop Mike another note explaining the date and circumstances and it should be cleared up. We all wish him a speedy recovery.

Microprose UK Relaunch

Microprose is a US software house that publishes simulation software. Packages like Solo Flight, F15 Strike Eagle, Silent Service came from them and were marketed here by US Gold. However, they have now parted company and Microprose set up its own UK distribution company. In addition they also are expanding into related market areas such as adventure games and 'high class' joysticks (two of which they are prepared to guarantee - one for a lifetime) They are also looking out for potential joint venture agreements with European companies or individuals. I was invited to their UK relaunch and found out some interesting bits. Many of the Microprose simulations are banned from over the counter sale in West Germany. They are said to be to realistic and may only be sold through specially licensed shops, like sex shops! Micropose thinks this is carrying things a bit too far and is taking the German authorities to court.

Their simulations quite good and I played with Solo Flight a couple of years ago with a lot of enjoyment. Solo Flight was a bit easier to 'fly' than Flight Simulator II but the latter was a bit more complete from the technical standpoint (i.e. it had more aircraft controls built into it.) We are negotiating a discount agreement with Microprose so see the Discounts Officer for more details.

Feedback

We receive many letters from members which contain thanks for what we in ICPUG try to do. However, one letter came my way which wasn't so full of praise. I won't mention the author's name but will quote from parts of his letter and provide some of my own comments and observations.

The author joined ICPUG four years ago after purchasing a VIC20 when others were starting to buy C64s, then upgraded to a C64 when others were switching to C128s and now did the same again with a C128 just when others are ordering Amigas. He sees himself as doomed to be a "perpetual beginner" and wishes ICPUG could be of more help.

I can sympathize with him as I purchased a VIC20 at about the same time and went on to the C64 and later the C128 (I even admit to using an Amiga sometimes). But letting others be the first to purchase new machines is not a bad idea. First, bugs come to light and, hopefully, get fixed. Second, more good software is available after a year or so. (See my comments above about the 80386 machines and 1990 release dates for software.) Third, waiting before buying can save a lot of money. Remember the price drop of C64's and of course the same thing has now happened with the Amiga. Finally, some things don't change that much from one machine to another. For instance, CBM BASIC on the VIC20, C64 and C128 is very much the same; if you know one, the others are almost trivial to learn. Even BASIC on the Amiga is still Microsoft BASIC albeit with a lot of enhancements.

One needn't feel left out just because one doesn't have the latest bit of kit. In fact, and this may be heresy to some, I don't use the Amiga for most of my work. I use a C128D with an 8250 disk drive with Superbase and Superscript running side by side and VizaStar for spreadsheet applications. I also use VizaWrite Classic 128 for high quality, proportionally spaced, right justified printing. What you are reading now was written with Superscript 128 and printed with VizaWrite Classic 128 onto an HP LaserJet at my desk. The editor has not touched it. (The original copy looks a bit better before it went through the photographing process on it way to being printed.) These 128 packages are my workhorses. I do use Superbase and Analyze! on the Amiga but since I haven't found a really good WP package for it I don't do a lot of serious work on that system yet. You're not out in the cold just because you don't have an Amiga.

Another point the author raised was "whether there is anyone who can advise me on recommended procedures for keeping genealogical or family history records - preferably without using Superbase. My belief that this program must be indescribably difficult to use stems from volume of space devoted to it in the Newsletter". He also says he "fought shy of Superscript and went for VizaWrite which does everything I want".

First, both VizaWrite and Superscript are very good word processors. But it is a bit ironic in that Superscript is probably the easier of the two to learn to use! Of course, VizaWrite's greatest strength is that it supports certain additional printer options; hence ICPUG's decision to use it for the Newsletter. Both packages have things like 'command strings' (macros) or 'glossaries' which may appear difficult to use at first but with a little effort become quite useful and powerful. But one need not use these 'extra' features with either of these programs!

Second, Superbase, being programmable, can be made to do some quite sophisticated things. It is really just like programming in an extended or 'Super' BASIC language. But again, like the WP packages, one can opt to use Superbase as a simple flat file system of storing records without programming, just like one may use VizaStar without its EXECution lists (another form of programming like Superscript macros) as a spreadsheet and database. Users may get into programming as much as they wish or can leave it alone. However, I know of no 'off the peg' database package of any power for any computer that doesn't require learning some kind of language (usually known as an inquiry language). Some of these use words more akin to ordinary English while others are more 'mathematically' orientated. In either case one must be very precise in both their choice of inquiry language 'words' and syntax; learning them is probably as difficult as learning BASIC. Plus Superbase has one big advantage; unlike most other database inquiry languages it is based on BASIC thereby avoiding the need for one to learn a second language. But no database of any

power is as easy to use as a simple word processor. Anyone who would have you believe so is not being completely honest.

Another point with which the author took exception was our use of the statement "Commodore shooting itself in the foot again". I must plead guilty to using that expression although I am by no means unique in my usage. First, please understand that most ICPUG members like Commodore machines to the extent that they own and use them. But many of us remember back when Commodore was one of the leaders in the business computer world; it even received a Royal Warrant a few years ago. It is now struggling to regain some significant share of that lost market. And it lost its market by making mistakes. Many dealers, technical experts and knowledgeable users thought bad decisions were being made and said so; the Commodore management didn't listen; the sales vanished. The irony was that certain bits of the Commodore product range were very nice. (Somewhat like the curate's egg, maybe?)

A recent example of a shot in the foot: something like a C128 was what many people said Commodore should develop as their next machine following the success of the C64; Instead CBM choose to change horses in midstream and brought out the Plus 4 and C16. The C128 was, as a consequence, a little too late on the scene to grab the sales it deserved.

Another example: The 1541 disk drive was well designed but at the last minute apparently someone decided to save a few pence and make it a slow serial device rather than a fast parallel one like all other drives they produced; the world is now full of speed-up devices for this drive in an attempt to correct what everyone says was a very bad decision (in fact I have never even heard anyone inside Commodore try to defend it).

Finally, a third example: The 1571 disk drive has a bug that corrupts data when writing to the second side under certain conditions. Commodore UK was (but thankfully, and possibly as a result of a recent change in personnel at their Maidenhead headquarters, are no longer doing so) writing to people who complained about the situation saying the bug was only a rumour put out by certain software houses. They did this in spite of the fact I, and many others, had in their possession the CBM internal 128 and 1571 Bug List which spelt out the problems in all their gory detail! I have been informed of a few legal actions underway as a result of that 'deny anything is wrong' policy. If they had 'come clean' at the beginning and said that they were working on fixing this almost none of these legal actions would have started. I leave it to others to figure out 'who shot whose foot'.

The author claims we are an elitist organization. I do agree with that. Many of our articles are somewhat more technical than those found in commercial magazines. But we only publish what our members write. And most of our previous Newsletters are still on sale and contain some very good elementary

articles such as Strictly for Beginners in 82/83 issues by Ray Davies and Teach Yourself Programming by Brian Grainger in 83/84 issues. Many members may wish to read these as they are very useful tutorials.

Still we try to cater for everyone. Any comments by other members on this subject will be welcome. Whilst I cannot promise to answer all letters (my morning post averages around ten ICPUG letters) I will try to place extracts of them in future columns and bring them to the attention of the National Committee.

AGM

Speaking of the National Committee, the AGM will have taken place by the time you read this article. The publishing deadline being as it is means that the results of the elections and other business won't appear till our Jul/Aug issue. In the meantime I hope to see as many of you as possible at the Commodore Show 12-14 June and at our Get-together on the Saturday.

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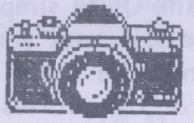

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SUPERSCRIPTED ACCOUNTS ON THE 128

by Peter Miles

Accounts using Superscript was originally written in July 1986 and mentioned in Jim Kennedy's Super* Comer Column. Since then further developments to the program have taken place together with tidying up etc. Therefore this article attempts to cover both the entire program in some detail as well as the recent changes. The program is in the public domain; may not be sold for profit; and is available from the appropriate ICPUG 128 librarian.

The whole reason for writing this applications program is because so many commercial packages had databases, diaries and other bits and pieces and frankly we didn't want them. This program using Superscript does not attempt to emulate a full-blown all-dancing professional program. Quite simply it can't. However, what it can do is arrange your accounts in neat and very readable form with all necessary information to hand. The other consideration was that we did not particularly like many of the professional formatted layouts. That's not to say that this is the final arbiter of all that is good but it does follow as far as is possible a logical and progressive list of all accounts activity. The system has not been approved by the Customs & Excise but they are logical people and are interested first and foremost in accurate and neatly presented figures. (My own accountant approves and that says something.)

The procedures are based round the standard Day Book format. That is to say all receipts, invoices, payments and cash movements etc, are entered in the Day Book format in any order. However, in your own interest it makes life easier if all entries for one type of payment are entered together, say payments, then receipts and so on.

A small point here: don't try and cheat; the VATman has heard it all before and then some (so has your accountant).

Whilst the Day Book is the Bible of the system, as many other detail formats as you wish can be created, depending on your requirements. The sample formats include the following:

1. Day Book
2. Receipts
3. Sales Ledger
4. Purchase Ledger
5. Purchases
6. Statements
8. Bankings
8. Analysis by Account No.

Each format is stored on disk as a separate document and is called to text area 2 as required, with the exception of the Day Book which is always in text area 1. You will see that some text editing procedures have not been arranged into command strings or macros. This is because many operations are infinitely variable and one string won't do the job. There are certain command strings that are common to some formats and considerable use is made of the '^' feature. This feature is not explained in the Superscript manual but it is used in the command strings of the Wide Table file on the Superscript disk.

```
**********************************************************************************
* DAY BOOK  All transactions for April 1987        (your business name)          *
**********************************************************************************
```

Date	A/c Code	Type	Chq	Inv	Name	Debit	Credit	Total ex. VAT.	VAT
1	13:	v: inv		23,45	: Butcher		234.56	234.56	0.00
2	65:	v: inv		P6034A	: Adverts		311.76	271.10	40.66
9	55:	v: inv		34	: Jim Smith	123.78		107.64	16.14
10	57:	v: inv		7234	: Bests Carpets		237.89	206.86	31.03
11	13:	v: pmt	0013	23,45	: Butcher	234.56		203.97	30.59
11	65:	v: pmt	0014	P6034A	: Adverts	311.76		271.10	40.66
11	127:	p: pmt	0015	cash	: Petty cash	20.00		0.00	0.00
15	1:	s: inv		1500	: Mr Nelson	144.00		125.22	18.78
15	2:	s: inv		1500	: Bar	3.25		2.83	0.42
15	2:	s: inv		1500	: Wines	15.17		13.19	1.98
15	55:	v: inv		512	: Harry's garage		23.45	20.39	3.06
15	1:	s: rec		1500	: Mr Nelson		144.00	125.22	18.78
15	2:	s: rec		1500	: Bar		3.25	2.83	0.42
15	2:	s: rec		1500	: Wines		15.17	13.19	1.98
26	43:	p: pmt	0023		: Wages	43.00		0.00	0.00
26	59:	v: inv	0012	W12/23	: Harry's Garage		453.23	394.12	59.11
26	43:	p: pmt	0024		: Wages	72.56		0.00	0.00
26	43:	p: pmt	0025		: Wages	39.34		0.00	0.00
26	43:	p: pmt	0026		: Wages	51.78		0.00	0.00
27	1:	s: inv		1503	: Mr Wilson	115.00		100.00	15.00
27	1:	s: inv		1504	: Miss Jones	15.00		13.04	1.96
28	1:	s: inv		1505	: Mr Harrison	10.00		8.70	1.30
28	1:	s: inv		1506	: Mr James	10.00		8.70	1.30
28	1:	s: rec		1503	: Mr Wilson		115.00	100.00	15.00
28	1:	s: rec		1504	: Miss Jones		15.00	13.04	1.96
28	1:	s: rec		1505	: Mr Harrison		10.00	8.70	1.30
28	1:	s: rec		1506	: Mr James		10.00	8.70	1.30
28	57:	v: pmt	0028		: Bests carpets	237.89		206.86	31.03
30	55:	v: inv		P453	: Jim Smith		345.34	300.30	45.04
30	55:	v: pmt		567	: Jim Smith	345.34		300.30	45.04
30	55:	s: inv		346	: Church repair	1000.00		869.57	130.43
30	55:	v: pmt	1214	512	: Harry's garage	453.23		394.12	59.11
30	55:	v: pmt	5	346	: Harry's garage	23.45		20.39	3.06
31	55:	s: rec		W12/23	: Church repair		1000.00	869.57	130.43
	Totals	Compiled on: (date)				3258.98	5708.43	5214.21	746.87

It cannot be emphasised too strongly that extreme care in entry and general use of this program is essential. Remember that ALL text can be erased instantly, and while a lot can be recovered because it is already on disk, you do not have the security of format as in something like Superbase. Be careful to always ensure that end of paragraph markers are used (left arrows). With due care it works well and reliably.

Note the use of numeric tabs other than in maths columns; nothing magic, it just keeps everything nice and tidy. The use of colons ':' MUST be included. The system cannot work without these search identifiers.

DAY BOOK

The day book is set up as follows:

Column 1 is the date. The month is stipulated in the heading box.

Column 2 is an account no. More about this later. You MUST use the colon (:).

Column 3 'Type'. Enter p: pmt (payment for exempt items such as wages, insurance etc); p: inv (invoice number for goods or services bought that are exempt from VAT.); v: inv (invoice number for goods or services received which are subject to VAT); v: pmt (monies paid against invoices received); s: inv (sales invoices you issue to your customers); s: rec (receipts for goods or services supplied by you)

Column 4 Simply cheque No. or paying in book No.

Column 5 Invoice No. Theirs & yours. Include this when ever necessary.

Column 6 The colon (:) MUST be used before any name. It is used as an identifier in searches.

Column 7 Debit entries. All entries where you pay out money, also YOUR invoices to your customers.

Column 8 Credit entries are made here when you receive money; also Purchase invoices for goods etc that YOU have bought.

Column 9 Total of that line excluding any VAT element. Items which are zero rated must be shown in this column as the same amount from the previous column. Exempt items are shown as 0.00 (nil).

Column 10 The VAT content of any entry that requires VAT. Certain things are either zero-rated (like food) or exempt (like bank payments, wages etc) and certain other categories of purchases. See VAT pamphlet 700.

Notice the account number in the second column. The idea here is to separate different categories of transactions. In the examples below,

a/c no. 1 is for sales of a particular type; a/c no. 13 is for purchases of a particular type, such as food if you were running a cafe or shop; a/c no. 57 is for purchases of, say, renewals of equipment. As long as you keep all similar transactions under one a/c number then it makes the task of searching for and listing all those transactions very simple. Your accountant would like this as it would enable him to ask you for all repairs and maintenance transactions to be listed. He could then very easily see what items, if any, would qualify for capital relief. This is one application that I have not found in commercial programmes for the 128. Lastly, when allocating account numbers to various activities, try and keep the blocks of activities similar. For example a/c's 1 to 10 could be sales; Nos 11 to 20, purchases that are VAT-rated; 21 to 30, purchases that are not VAT-rated; bankings of various sorts could be a high number, say 100 to 115, and so on. Above all, keep it CLEAR.

The general layout and tabs is the same for each format. The tab positions MUST be adhered to or the whole thing will be a total shambles. As this is done on an 80 column screen (128D & 1901C using a 1526 printer) any tab position numbers will not be any use to 40-cols types.

```
*********************************************************************************
*  SALES LEDGER                                          (your business name)     *
*********************************************************************************

--------------------------------------------------------------------------------
                                                                        Amount
    A/c                                                                 owed
Date Code Type  Chq     Inv        Name                Debit    Credit
--------------------------------------------------------------------------------
 15   1:   Inv        1500    : Mr Nelson            144.00
 15   2:   Inv        1500    : Bar                    3.25
 15   2:   Inv        1500    : Wines                 15.17
 15   1:   Rec        1500    : Mr Nelson                     144.00
 15   2:   Rec        1500    : Bar                           3.25
 15   2:   Rec        1500    : Wines                        15.17
 27   1:   Inv        1503    : Mr Wilson            115.00
 27   1:   Inv        1504    : Miss Jones            15.00
 28   1:   Inv        1505    : Mr Harrison           10.00
 28   1:   Inv        1506    : Mr James              10.00
 28   1:   Rec        1503    : Mr Wilson                     115.00
 28   1:   Rec        1504    : Miss Jones                     15.00
 28   1:   Rec        1505    : Mr Harrison                    10.00
 28   1:   Rec        1506    : Mr James                       10.00
 29   1:   Inv        1507    : Mr Gladstone         276.00
 30  55:   Inv        P346    : Church repair       1000.00
 31  55:   Rec        P346    : Church repair                 1000.00
--------------------------------------------------------------------------------
  Totals compiled on:  (date)                      1588.42  1312.42        276.00
================================================================================
```

The Day Book is the most important document of the system. In use one presses the Tab key or F7 key to move from tab to tab. Entries are made left to right and you MUST be careful to get all entries in properly. A wordprocessor is not at all forgiving. The first six columns are all simple enough. The name column must have its identifier the colon. Tab on to the next column if the entry is a debit. When the entry is finished the cursor should be flashing next to the 'pennies',column 54. To calculate the VAT, press 'Run stop' 'd', this will calculate and display the total excluding VAT and then the VAT amount on that transaction. Similarly 'Run stop' 'c' would calculate the credit column.

For VAT exempt & zero rated debit & credit items see the macro list for an explanation.

SALES LEDGER

The sales ledger is a summary of all invoices issued by you together with all monies received. It does not have to show any VAT elements. It can also show any amounts outstanding that you are owed.

OK, so how to obtain the information for the sales ledger? It is done by macros which extract the relevant entries from the Day Book. Details are on the program disk.

In the Sales Ledger format several things are worth a mention. The 'S:' has gone from the third column and the VAT exclusive and VAT columns are gone. They have nothing to do with a Sales Ledger. Certain debits and credits 'cancel' each other out, which is how it should be. However, notice that the debit column is more than the credit column. You may easily total the ledger showing the difference between the debits and credits and therefore what you are owed.

A Sales or Purchase ledger can be a mixture of different customer names or just one customer per ledger page, whichever suits you.

If you run a cash business like a shop where you rarely, if ever, issue invoices, then it is not necessary to use a sales ledger. In which case you don't have to use s: inv in the day book simply s: rec which would appear in the credit column. DON'T CREATE PAPERWORK JUST FOR THE HELL OF IT.

PURCHASE LEDGER

The Purchase Ledger works in a similar way to the Sales Ledger and the same strings are used.


```
**********************************************************************
*  PURCHASE LEDGER                          (your business name)     *
**********************************************************************

-----------------------------------------------------------------------------
    A/c                                                          Amount
Date Code Type  Chq     Inv       Name          Debit    Credit    owing.
-----------------------------------------------------------------------------
 1  13:    Inv        23,45  : Butcher                   234.56
 2  65:    Inv        P6034A : Adverts                   311.76
 9  55:    Inv        34     : Jim Smith                 123.78
11  13:    Pmt 0013   23,45  : Butcher          234.56
11  57:    Inv        2341   : Bests carpets             237.89
11  65:    Pmt 0014   P6034A : Adverts           311.76
11 127:    Inv Cash   Petty  : Post office                10.00
15  55:    Inv        512    : Harry's garage            23.45
26  43:    Pmt 0023          : Wages             43.00
26  59:    Inv        W12/23 : Harry's Garage            453.23
26  43:    Pmt 0024          : Wages             72.56
26  43:    Pmt 0025          : Wages             39.34
26  43:    Pmt 0026          : Wages             51.78
26  55:    Pmt 1234   34     : Jim Smith         123.78
28  13:    Pmt Cash   4312   : Martins             4.12
28  57:    Pmt 0028   2341   : Bests carpets     237.89
30  55:    Pmt 1214   512    : Harry's garage    23.45
30  55:    inv        P453   : Jim Smith                 345.34              45.04
30  55:    pmt        567    : Jim Smith         345.34                      45.04
30  55:    Pmt 1215   W12/23 : Harry's garage    453.23
-----------------------------------------------------------------------------
   Totals compiled on (date)                    1940.81  1740.01             90.08
=============================================================================
```

```
**********************************************************************
*  SALES RECEIPTS for:                      (your business name)     *
**********************************************************************

-----------------------------------------------------------------------------
     A/c                                                      VAT
Date  No   Type      Inv       Name                 Credit    excl     VAT
-----------------------------------------------------------------------------
 15   1:    Rec      1500   : Mr Nelson             144.00    125.22   18.78
 15   2:    Rec      1500   : Bar                     3.25      2.83    0.42
 15   2:    Rec      1500   : Wines                  15.17     13.19    1.98
 28   1:    Rec      1503   : Mr Wilson             115.00    100.00   15.00
 28   1:    Rec      1504   : Miss Jones             15.00     13.04    1.96
 28   1:    Rec      1505   : Mr Harrison            10.00      8.70    1.30
 28   1:    Rec      1506   : Mr James               10.00      8.70    1.30
 29   1:    Rec      1507   : Mr Gladstone          276.00    240.00   36.00
 30  55:    Rec      567    : Jim Smith             345.34    300.30   45.04
 31  55:    Rec      346    : Church repair        1000.00    869.57  130.43
-----------------------------------------------------------------------------
   Totals  Compiled on: (date)              0.00  1933.76   1681.55   252.21
=============================================================================
```

SALES RECEIPTS

Very often people who use ledgers prefer to keep a separate list of sales as well as the ledgers. Remember ledgers do not include VAT breakdowns, sales lists do. From a VAT point of view sales (and purchases) show all relevant details required although some VAT inspectors may prefer separate Output VAT documents but apart from the title at the head of the document the information is the same.

```
**************************************************************************
*   PURCHASES for:                          (your business name)         *
**************************************************************************

-------------------------------------------------------------------------
                                                          VAT
  Date  A/c Code Type  Chq  Inv          Name      Debit      excl    VAT
-------------------------------------------------------------------------
  11    13:      Pmt  0013  23,45   : Butcher      234.56     203.97  30.59
  11    65:      Pmt  0014  P6034A  : Adverts      311.76     271.10  40.66
  26    59:      Pmt  0012  W12/23  : Harry's Garage 453.23    394.12  59.11
  28    13:      Pmt  0027  4312    : Martins        4.12       3.58   0.54
  28    57:      Pmt  0028          : Bests carpets 237.89     206.86  31.03
  30    55:      Pmt  1214  512     : Harry's garage            20.39   3.06
  30    55:      Pmt  1215  W12/23  : Harry's garage   453.23   394.12  59.11
-------------------------------------------------------------------------
  Totals  Compiled on: (date)                      1241.56  476.68 1494.14 224.10
=========================================================================
```

PURCHASES

The Purchase document follows the same lines as the Sales document. It is easy to see the difference from the examples above. Again this document gives a full breakdown of the VAT element and unless you really need an Input VAT document then the Purchase document will do very well.

```
**************************************************************************
*   STATEMENT                                   (your business name)     *
**************************************************************************

-------------------------------------------------------------------------
                                                                  Amount
  Date Inv.      Inv. no.      Name          Due       Paid        Due
-------------------------------------------------------------------------
    9  55:  Inv   34        Jim Smith      123.78
   30  55:  Inv   P453      Jim Smith      345.34
   30  55:  Rec   P453      Jim Smith                345.34
-------------------------------------------------------------------------
  Statement dated: (date)                 469.12     345.34      123.78
-------------------------------------------------------------------------
```


STATEMENTS

Statements are something most people are familiar with. Our example is not very different. It shows all monies paid out and received together with any outstanding balance for one customer. From this point of view a statement is the same as a ledger page but that is just coincidence. Whilst a ledger page could show every transaction for the whole of the last VAT quarter, or longer, Statement is designed to show all transactions over a shorter period, typically one month. Therefore our statement is a little different to the ledger; specifically debits are called Due and credits are called Paid. The totals box is headed as Statement.

In the example it can be seen that Jim Smith had two invoices due but had paid invoice number 543 the same day as he had had the invoice. Obviously the Due & Paid amounts of £345.34 cancel each other and so the amount outstanding is £123.78 for invoice number 34.

```
**************************************************************************
*   OUTPUT VAT                                  (your business name)     *
**************************************************************************

-------------------------------------------------------------------------
  Date  A/c No Type      Inv          Name        Debit      Excl.VAT  VAT
-------------------------------------------------------------------------
    5   1:     Inv    1500     : Mr Nelson      144.00      125.22  18.78
   15   2:     Inv    1500     : Bar              3.25        2.83   0.42
   15   2:     Inv    1500     : Wines           15.17       13.19   1.98
   27   1:     Inv    1503     : Mr Wilson      115.00      100.00  15.00
   27   1:     Inv    1504     : Miss Jones      15.00       13.04   1.96
   28   1:     Inv    1505     : Mr Harrison     10.00        8.70   1.30
   28   1:     Inv    1506     : Mr James        10.00        8.70   1.30
   30   55:    Inv    P453     : Jim Smith      345.34      300.30  45.04
   30   55:    Inv    P346     : Church repair 1000.00      869.57 130.43
-------------------------------------------------------------------------
  Totals compiled on: (date)                   1657.76     1441.55 216.21
=========================================================================
```

VAT

VAT is that little something we could all do without .... Output VAT is the VAT you collect from your customers for Customs & Excise. The things to look for here are that whilst the format is for Output VAT the amounts are shown in the debit column. You will recall that this is for invoices you have issued but have not received payment. Command strings will search for the relevant entries.

The search for Input VAT (the VAT you claim back from the Customs & Excise) is similarly handled. For those of you who follow the financial

news the system of accounting for Input VAT will change later this year, but check with your accountant first.

```
**************************************************************************
*  BANKINGS  (date)                          (your business name)        *
**************************************************************************

-------------------------------------------------------------------------
    A/c    Stub
Date No.   No.          Name                    Credit
-------------------------------------------------------------------------
 20 120:   Bnk 0215     : Nat West              2789.78
-------------------------------------------------------------------------
  Totals compiled on: (date)              0.00  2789.78     0.00     0.00
=========================================================================
```

BANKINGS

Bankings follow a similar format to the other documents but, unlike the others, the information for this document is NOT called from the Day book. Here you have to enter the data directly. Each time you bank money it is easy to check the amount by adding all the appropriate credits from the day book. You must NOT enter the bank totals in the Day book.

The Totals document called from disk is a general totals format so always shows various 0.00. Its not significant but saves having umpteen special Totals documents specially formatted.

```
**************************************************************************
*   PETTY CASH  (date)                       (your business name)        *
**************************************************************************

-------------------------------------------------------------------------
    A/c                                                    Total
Date Code Type  Chq    Inv      Name          Credit  Debit  ex. VAT.  VAT
-------------------------------------------------------------------------
 11 127: v:  rec 0015 cash    : Petty cash     20.00                0.00 0.00
 14  56: v:  pmt cash 12      : Loveridge logs           15.00      0.00 0.00
-------------------------------------------------------------------------
  Totals Compiled on: (date)                  20.00    15.00      0.00 0.00
=========================================================================
```

PETTY CASH

Petty cash is as straightforward as any other document except that the credit and debit columns are reversed. This is because to draw the cash from the bank you had to debit the bank account and credit the petty cash account. However, when you spend money you debit the petty cash account. (Easy, isn't it?) Consequently, the actual drawings from petty cash must be entered by hand as they do not form part of the Day book.

Otherwise this document is similar to all the others.

It is evident from the totals box that there is still a credit of £5 in the petty cash account. (Rumour has it that the actual petty cash tin is supposed to have £5 as well.)

```
**************************************************************************
* ANALYSIS BY A/C No.55  FOR PERIOD : APRIL 1987       (your business name)
**************************************************************************
*
-------------------------------------------------------------------------
    A/c                                                          VAT
Date Code Type  Chq    Inv      Name          Debit    Credit    excl.   VAT
-------------------------------------------------------------------------
  9  55: v:  Inv       34     : Jim Smith               123.78   107.64  16.14
 15  55: v:  Inv       512    : Harry's garage           23.45    20.39   3.06
 26  55: v:  pmt 1234  34     : Jim Smith       123.78           107.64  16.14
 30  55: v:  pmt       512    : Harry's garage   23.45            20.39   3.06
 30  55: v:  inv 1215  W12/23 : Harry's garage             453.23 394.12  59.11
 30  55: v:  pmt       P453   : Jim Smith       345.34
-------------------------------------------------------------------------
  Totals compiled on: (date)                    492.57   600.46  650.18  97.51
=========================================================================
```

ANALYSIS BY ACCOUNT

Lastly one of the most useful facilities is the Analysis by Account No. Most commercial programs allow every entry to be printed out at the end of a session. It is then usual to store this current batch of information to a file. However, the information is only stored as a summary, not as a total archive. In other words, at the end of a month you can print out running totals for every account, but should you want to reprint a transaction in full there is no way you can do it. With this system you can re-print any transaction at any time. This is because the Day Book is stored as a complete document in ASCII file format that can be amended any time. The Analysis By Account facility allows you to search the day book for every occurrence of any account number and transfer that information to another document.

Suppose your accountant asks for a detailed breakdown of all transactions conceming capital expenditure. Using most commercial programs you wont be able to show him anything other than your regular printouts with the information spread over the various months. This is going to take a lot of time to read through and sort out. With this program, write a document as in the example and using the search for the account number required, say '55:', set up the search and transfer all the transactions to your new document. All information is now neatly arranged in one place and your accountant can then make the necessary decisions.

In this example Harry's Garage entry might be for a car service which unfortunately would not attract capital relief, whereas Jim Smith might be building a new extension to your office which would. But that's where accountants come in.

At some stage it will be necessary to give your accountant summaries of every account, i.e. how much has been received into a/c 1 'sales'. If you have, say, 12 monthly 'sales receipts' documents and there is room on the disk (and memory), use the link file facility and search all your files at once but only on the totals line at the bottom.

I hope all this makes sense . . . more or less. It does all work perfectly well and if you think it might just help you out then that's what it's all about. Not every eventuality has been covered here but most of the usual requirements should be quite easy to follow. Feel free to rewrite the thing completely if you so wish and if you have some great ideas give me a ring on the following number any time up to 11.00pm: (0927) 60339 - Pete Miles, The Queens Armes Hotel, Charmouth, Bridport, Dorset DT6 6QF.

--oOo--

BIG BLUE BLUES (or the Perils of CBM–IBM Conversion)

by Barry J Oliver, CHN Analysis Ltd

(reproduced, by courtesy, from the ICPUGSE March 1987 Newsletter)

Gather round, chums, and harken unto me. Be assured that the pessimistic title of this piece is totally misleading, being there mainly for the benefit of our illustrious Editor. All editors think that only bad news sells copies, and good news is no news at all. The conversion from Commodore to IBM is quite easy in fact, and the main point of this article is to tell you all how easy it is, and to encourage others to have a go for themselves.

Those of you with long memories will recall that I wrote previously in these pages (ICPUGSE Issue 18, Feb. 1984) about a suite of chemical calculation programs that I had written, called 'Rhubarb'. Now in its twelfth version, 'Rhubarb' is alive and well and utterly indispensable for my daily work. I have long harboured the idea that it might be saleable to other analysts, but a half-hearted approach to some colleagues a few years back produced no response, and I forgot about the idea. That is the background: the story starts here.

In the middle of 1986 we were approached by one of our regular customers asking if we could recommend a software house who might be able to supply programs for supplementary calculations on the analytical results that we, CHN, present to them. In particular, they were interested in the possibility of calculating quantities of trace solvents or other impurities present in supposedly pure compounds that our analyses had shown to be impure. 'Yes,' we said, 'us!' - having recently added such a program to the 'Rhubarb' set to do this very calculation. The only problem was that while we were fully CBM-equipped, they were dedicated to IBM-PCs; more precisely, PC-XTs with both floppy and hard disk drives. My first thought was to ask around for advice, and where better than the Club? I was advised to talk to our own PC expert, Peter Reynolds, and what he had to tell me was very encouraging. He assured me that the IBM-PC is easy to use, with a good screen editor, extended BASIC, toolkit, graphics and ready-programmed function keys for RUN, SAVE, LOAD and other common operations. The only problem that he had found was with arrays, but he admitted that he had done no serious large-scale conversion such as I envisaged: about 30K in BASIC. Thus, with only a slight doubt on the arrays, for 'Rhubarb' is stuffed with arrays, I decided to charge ahead with optimism.

There are two stages to the conversion of BASIC from any one computer, A, to another computer, B:

a) the conversion of the program disc from computer A into a disc readable by computer B;

b) The conversion within computer B of the program in BASIC A into BASIC B.

Stage a) is the harder one. Computer programs do exist with the capability of converting material from one disk format to another. Naturally, the computer has to be coupled to a disk drive of each type, A and B, so the full facilities for conversion are thin upon the ground and not easily found. We had our CBM 4040 to IBM PC-XT floppy disk conversion done unofficially at what had better remain known as 'a local institution'. If you are keen to go ahead with CBM-to-IBM conversions, then you will need to ask around to find some local organisation with the necessary facilities. The obvious places to ask at are local polytechnics, universities and research institutes, especially those with strong computing departments. This is definitely a case of 'it's not what you know, but who you know'. Because of the unofficial nature of our job, I have been unable to find out any interesting details of the disk conversion process.

Stage b) is naturally very easy in outline, but there are some bear-

pits to be avoided. Obviously you must borrow computer B to do the BASIC conversion job on. In our case, the customer waited so long for higher management to give the go-ahead that in the interim one of the two PC-XT's became hard-wired into a network, and that meant that the other one could not be spared. Therefore we had to hire an exact equivalent computer, with heavy emphasis on the phrase 'exact equivalent'. We wanted it for, well - how long? How long would the BASIC conversion - 30K, remember - take?. Are the two BASICs very similar? A quick borrow of a library book, (fortunately books on PCs abound) indicated that while most of the BASIC was identical, the screen layouts would require complete rewriting. I therefore estimated two week' hire was needed. Have you ever tried to hire a PC for two weeks? The computer hire companies are not interested in anything under 6 months in general. Eventually we found a new local outfit who were very eager to please, and yes, we could hire for 2 weeks at £300 per week and no, not a PC exactly, but a Compaq, guaranteed fully PC-compatible. I talked them down to £200 per week including printer, for the Xmas holiday fortnight, and a cast-iron promise of total compatibility. We went ahead on that basis, and I did the program hacking over the holiday, about half a day every day. I completed the job with just one day to spare, having a program that ran perfectly on the Compaq, plus multiple disk copies and printed listings. But would it run on the customer's PC-XT?

Leaving that question hanging there (the suspense level generated is within the legal limits defined by the Galactic Statutes of Narrative Practice), let us look at some of the nuts and bolts of the BASIC conversion. First, with only one exception, the CBM BASIC 2 statements, commands, string functions, arithmetic functions, and arithmetical and logical operators, all worked perfectly on the Compaq. None of the programming for actual calculations and string handling needed to be touched at all, which was a great relief. The one exception is very important, as it had to be amended on every line where it appeared before I could run the disk-converted program. In IBM BASIC the function GET does not scan the keyboard, but is a disk command, and reads a datum from the disc. The IBM equivalent of our GET is INKEY$. Now, I always use GET to scan the keyboard for a keypress to move things along once a displayed result has been assessed, so all GETs (lots of them) have been changed as shown below. Further, it is obvious that all POKEs and PEEKs have to be changed. The only POKE in 'Rhubarb' is the familiar one to clear the keyboard buffer. The equivalent POKE was found in the customer's IBM manual and,

astonishingly, it was also correct for the Compaq. Putting all this together we find that:

```
CBM:100 POKE 158,0:REM** CLEAR KEYBOARD BUFFER
    110 GET A$:IF A$="" THEN 110
    120 GOSUB xxx etc.,
becomes
IBM: 100 DEF SEG=0:POKE 1050, PEEK(1052):REM** CLEAR etc.
    110 KY$=INKEY$:IF KY$="" THEN 110
    120 GOSUB xxx etc.
```

However, the real problem was the screen layouts, which had to be completely changed for several reasons:

a) the CBM cursor commands like <CLR>, <CRT>, <CDN>, <HOM> etc. cannot be used;

b) the TAB command in IBM BASIC erases in its wake! (Black mark, IBM, for that one!);

c) in 'Rhubarb' I made much use of the DOWN$ device, which is just a bunch of 23 <CDN>s. To place a statement X on the screen, I simply counted down as many lines on the screen as I needed, say 20, with PRINT "<HOM>";LEFT$(DOWN$,20);X. Obviously DOWN$ cannot be used if <CDN> is invalid;

d) we had to change from 40 to 80 columns anyway.

What IBM BASIC has to offer is the LOCATE command, which is quite different and far superior to the Commodore system. It is worth looking at this in some detail. LOCATE is a sophisticated function. First, it enables the obvious: thus, to place a statement on screen at position 31 on line 2 needs only LOCATE 2,31:PRINT "Statement." Or, to display a result at the start of row 19: LOCATE 19,1:PRINT X. And so on. LOCATE also takes computed values; thus one line in the converted program reads:

```
LOCATE (2*J)+1,1:PRINT "///":LOCATE (2*J)+2,1:PRINT "///":
LOCATE (2*J)+2,54:PRINT "X="INT(X(J))
```

In this example the two "///"s are erasing previous entries. But LOCATE is also used to define the size and style of the cursor. The power-up IBM cursor is a weak little underscore. It may be changed to a square, or to various rectangles or lines, or it may even bracket the screen location above and below the character. I simply set the cursor to a full solid rectangle at the beginning of the program, but it is quite easy to change cursor styles at will throughout the program. The full LOCATE command to position any cursor at any column C on any row R

is LOCATE R,C,a,b,c; where a is 1 or 0, on or off, and b and c determine the extent of the cursor measured from the top and the bottom of the pixel. Unless a new cursor is required, one just uses LOCATE R,C. After all this, the CBM system seems amateurish. Finally on this front, the program command to clear the screen is delightfully simple and easy to remember; it is just CLS.

After half an hour or so of token resistance, I caved in and embraced the LOCATE function wholeheartedly. Even with this very professional command and several others to hand, it still took me many days to change all the screen layouts.

I have no intention of giving a complete comparative review of PCs versus PETs, but I must also comment on the different way the two computers operate their BASICs. Being a Commodore man only, I expected the BASIC to be in ROM. I was initially a little peeved at having to load the BASIC into the Compaq from disk every time I turned the thing on; it seemed so unnecessary. In fact, it has a hidden advantage which probably saved me a lot of potential trouble. IBM seems to have issued many versions of its 'Advanced BASIC', known as BASICA. I had expected to have problems with the version of BASICA that was available to me not being quite the same one as the customer uses but, with this system, it does not matter. All I did was to provide them with a disk which contained not just the converted program, but also the exact DOS and exact BASIC being used (in this case, BASICA 2.11, whereas the customer's programs were all in 2.10, and most users are onto yet later issues). Using this system rapidly became second nature, and it is much quicker to start up than it is to describe the start-up. What happens is this: stuff the disk into Drive A, then switch the PC on. It chunters away performing its own diagnostic checks; boots up the DOS from the disk; checks for the presence of an American or British keyboard and adjusts accordingly, and waits: you respond with "BASICA" which it LOADs; you press f3 which is LOAD, followed by the progname, and wait for the loading, which takes 3 seconds for 30K (!); press f2 which is RUN, and away you go.

'And away you go,' I said. But all of the above was, of course, on the Compaq. Did it work on the customer's IBM? Yes, it did, and astonishingly well. There was one, just one, tiny fault, and that was with the COLOR command. What, didn't I mention COLOR? No, I haven't flipped, the COLOR command is used on monochrome displays. There are slight incompatibilities, as I understand it, between the monitors on the IBMs let alone the other PCs. The COLOR command is used to define (in monochrome) the intensity of the display, both in normal and

reverse video modes. Intensity is defined on a scale of 0-15, with 7 being normal intensity. Thus COLOR 0,7 is normal strength reverse video, and COLOR 7,0 is normal strength normal video. The monitor on the Compaq was very new, and 0,7 was very intense, so all my reverse video displays were at 0,6 level. On running the program on the customer's IBM, no reverse video at all! It took only 5 minutes to determine that the particular monitor would give only normal or nothing. Changing all COLOR 0,6 commands to 0,7 was all that was required! And that was the only problem, both on the day of installation, and up to date. The converted program, now restyled 'Labsums', is proving to be of great benefit to our customer.

As I was working to a deadline on a specific project, I did not have much time to explore the many new commands and exciting possibilities that are to be found on the PCs, nor is there room here to report on most of what I did explore. I shall just mention in passing the 'soft keys'; the many aids to very rapid programming and editing; the keyboard - its good and bad points (a whole paper could be written on this alone); the perverse LIST command (how do you stop it scrolling?); and the many novel commands (such as SOUND) in the extended BASIC. What a joy to have no PET-style INPUT crashes! I must also mention the excellence of the Compaq manuals, which gave everything except PEEKs and POKEs. Now, what have I omitted? Ah! yes, Peter Reynolds' difficulty with arrays. True enough, I found a very opaque entry on arrays in the Compaq manual, totally beyond me, so I simply ignored it; all the CBM-generated arrays behave perfectly on both Compaq and IBM.

So, drawing all the threads together, how shall I summarise the experience? Much easier than I dared to hope; hard work, yes, but only by virtue of having so much program devoted to screen layouts, compounded by having to amend from 40 to 80 columns. The PC's are a different class of computer and, once over the culture shock, great fun to use. Altogether, a very rewarding exercise from both the intellectual and financial points of view. I would encourage anyone contemplating the CBM to IBM conversion to have a go. Come on in, chums, the water's fine!

--oOo--

REMINDER - TIME IS SHORT

Copy for the July/August issue must reach the editors by June 21. Letter-writers please send a disk, if possible, if your letter is more than two or three lines (see p302).

Problems with the 1571

by Greg Perry

Are you the proud owner of a C128D or C128 and 1571 drive? Nice aren't they? The 1571 is definitely one of the best single disk drives that Commodore have produced in recent years. Immunisation at birth seems to have banished the old 1541 mis-alignment virus. It also runs significantly cooler than the old 1541, is quieter and more intelligent than previous drives with the ability to read and write a wide variety of different (even non-Commodore) formats.

Unfortunately, the magic 'burst mode' commands have proved to be difficult to use for normal programming and are less useful than we expected. However, the fast loading of programs and files is a boon.

But beware, Commodore engineers have ensured that there are still a few little bugs crawling around inside the Disk Operating System of the 1571.

Myths

There have been suggestions at the club meetings (ed note: Queensland CBM Users Group) that there are different versions of the 1571. As far as I can ascertain this is incorrect. Although there have been some changes to the 1571 electrical specifications for the circuit boards (i.e. 1571 vs 128D) the actual ROM code is DOS Version 3.0 revision 2(?). Commodore have not released any other version in production drives. The ROMs in the 1571 and 128D are interchangeable.

Minor Problem - Software Copy Protection

The first problem surfaces with some 1541 disk protection systems on the latest 1541 software. This is not the fault of the 1571 but rather the result of indifferent programming on the part of the software producers. Many copy protection systems for the 1541 rely on extra tracks outside the normal 1-35 range, nominally 36 and 37. (Flight Simulator and Elite are two examples.)

These tracks are actually created on the inside of the disk closest to the hub of the drive. Even with the 1541 (especially the later ones) this may cause problems. It is relatively easy for someone with knowledge of the Disk Operating System ROMs to write code to create, read and write such extra tracks but care is required.

Although the 1541 part of the 1571 DOS is generally compatible with that of an original 1541, accessing tracks past track 35 must be done with some skill since not all of the older code will work correctly. In the worst case (most?) the drive will end up in Commodore Heaven with the head being driven into unknown territory on the very inside of the disk. Once this happens, the user

may find that even after turning the drive off and on again it will refuse to load anything, even a directory.

If this problem occurs it is necessary to force the drive to bring the head back to the normal range. Fortunately this can be done without pain by INITIALIZING the drive WITHOUT the disk as follows:

1. Open the drive door
2. Turn drive off for a few seconds and back on again
3. Enter OPEN 15,8,15,"I0" and press RETURN

The drive will rattle a bit and then stop with the error light flashing; as it should because there is no disk in! All should now be OK. You should be able to load directories and programs normally. (ed note: I experienced this same problem with my old 1541 and solved it by inserting the cardboard head protector which came in the drive from the factory. This forced the head to its normal 'parking' position.)

A Major Bug - Side Two of the 1571

Major problems with the 1571 appear when we start using the second side of the disk. Incidentally, is it really the back side of the disk and is the back side on the top or on the bottom? (ed note: Answers to Greg Perry, not me please. I have enough mail already, and besides, I know the answer.) Some overseas magazines have even gone so far as to suggest that the user should never use side two by ensuring that a 1571 disk is never more than half full. This is not actually true. Apart from the speed problems, side two can be used safely within certain guidelines.

The first minor annoyance occurs when the disk is at least half full and the file or program has to be saved onto the second side. Unlike the handy speed increase on side one, when writing to side two the 1571 speed drops to about 1/3 to 1/2 of that of the 1541! The problem is caused by what we feel is a fault in the organisation of the sectors on a 1571 disk. The Block Allocation Map (BAM) which keeps account of which sectors are used is split between side one and two. Unlike side one where the BAM is in memory all the time, when writing to side two the drive has to keep reading the BAM from the disk on side two to find out the location of the next free sector. This slows down the process of saving a file dramatically. Still, saving onto side two does work reliably when ONLY A SINGLE FILE is in use, such as saving a program of text from a WP. (ed note: I think this BAM structure was the result of making the 1571 read and write compatible with 1541 disks. However, I have seen a new prototype 1571 drive unit which is around twice the speed of the old 1571. Unfortunately, this prototype still exhibited a major bug when more than one channel was open. And a word of caution about using a WP and saving to side two of the disk; saves to side two may be done UNLESS one is

using something like Superbase and Superscript running side by side in which case corruption will occur as will be apparent below.)

Data Corruption

For the last six to twelve months or so a number of us have been finding that certain programs cause problems when used on the 1571. When using any of the BASIC compilers or assemblers for the 128, and even for the C64 when used with the 1571 in double sided mode, we often found that although the compilation appeared normal, when the compiled program was subsequently loaded into the computer a large block, up to 25K at times, was missing. For example, a compiled program which according to the directory was 150 blocks long was loaded into memory and only occupied 12K, equivalent to 50 disk blocks. We had LOST 100 blocks somewhere. (ed note: I was losing about 100 disk blocks when developing Superdesk under similar conditions; Superbase records were disappearing and the Superscript dictionary became so corrupted it didn't know simple words like 'house, dog, Commodore, in'. pun intended)

This caused great problems with our recently completed GP Term communication program for the C64. This machine code program of 36K was written using an assembler system on the 128. Containing 11000+ lines of code, the source file and assembled program simply would not fit onto a single side of a 1541!

Other programs also cause problems. For example, in our club database program we store the records of up to 1500 members in a relative file. To create a selective mailing list we read members names and addresses from the file and write them back to a sequential file which we can use with the Superscript mailmerge facility. Only problem is that we ended up with garbled data!

We have tracked the problem to using side two of the 1571 disk. When we insured that things like the source and compiled programs stayed on one side of the disk or used a second drive to hold the compiled or assembled program we had no problems.

The bug can be succinctly defined as follows:

Data corruption WILL occur whenever one relative and one sequential file or three sequential files are open and the new file is being written to side two.

Let's Demonstrate the Problem

Take a new disk out of the box and FORMAT it with, for example, HEADER "TEST",I01. Then enter and run the following program on the 128 and 1571 or 128D and watch what happens. (ed note: Save this program to a different disk

or your the demo won't happen exactly as described below - the disk must not contain any other files or the corruption will occur on different places than described.)

The program first creates a RELative file containing 716 blocks (lines 150-190) so as to ensure that side one is completely filled (i.e. more than 664 blocks) and then writes a few records to the RELative file (lines 220-260). The disk is now set up to demonstrate the bug.

By all logic of Commodore disk files we should be able to read some of the records from the RELative file on side one and write them into a new SEQuential file. It just happens that the new file will use side two.

If you are not familiar with RELative files don't worry, I am not trying to pull the wool over your eyes. This process works fine on a 1541 or on side one of the 1571 and is used extensively in database programs to produce a mailing list file for the Queensland Computer Users Group.

```
100 rem ******** demo of 1571 bug ***********
110 rem (c) greg perry, brisbane, australia 1987
120 :
130 rem ******  create relative file to fill side 1 *****
140 rem and pre-expand file
150 dopen#2,"main file",l254:gosub 540
160 print "[clr] please wait": creating relative file
170 print ". now's the time to get a cuppa!"
180 rn=710:gosub 500:rem position record
190 print#2,"end record"
200 :
210 rem ******  write some records to file  ********
220 for rn=1to40
230 print "writing relative record #";rn
240 gosub 500: rem position record
250 print#2, "this is record #";rn
260 next:dclose
270 :
280 rem *** demonstration of error *********
290 :
300 dopen#3,"bad file side 2",w
310 if ds=63 then dclose: scratch "bad*":gosub 540:goto 300
320 dopen#2,"main file"
330 for rn=1to40
340 print "reading record #";rn;
350 gosub 500: rem position record
```

```
360 rem read from relative file and write to sequential file
370 input#2,a$:print a$
380 print#3,"this is a copy of record ";rn;"= ";a$
390 next:dclose
400 :
410 rem *** now read back the mess we created ********
420 :
430 dopen#2,"bad file side 2"
440 i=0:do until st<>0:i=i+1
450 input#2,a$:print i,a$
460 loop:dclose:end
470 :
480 rem position to relative file
490 rem position to relative file twice!
500 record#2,(rn):gosub 540
510 record#2,(rn)
520 :
530 rem check disk error
540 if ds<20 or ds=50 then return
550 print "disk error ";ds$
560 dclose:end
```

If you run this program you will notice that the data read back from the disk is corrupted after the 20th record. Note also that a large part of the data in the middle is missing.

As another test, view the directory of the disk and note the number of blocks free. The total of blocks free and allocated must add up to 1328. Now VALIDATE or COLLECT the disk and view the directory again and recalculate the total blocks. Strange isn't it, we have now created a disk with more blocks than we started with!

What's actually happened? If one checks the disk with a track and sector program such as Paul Blair's 128/80 Disk Utility (ed note: Paul is another ICPUG member down under) one finds that our new SEQuential file is not in fact 9 blocks long as indicated but contains only 6 blocks.

For a bit of fun, try to COPY the bad file using COPY "BAD FILE SIDE 2" TO "ANOTHER BAD ONE" and see what happens.

The Solution to Side 2 problems

Why does this happen you may well ask. I just don't know, I have a fairly good idea but I'm not going to tell you just yet. Stay tuned to the next issue.

If anyone has any suggestions as to what causes the problem please send us your answer. (ed note: the address is Dr. Greg Perry, 21 Aloomba Road, Ashgrove, Queensland, Australia 4060)

A few hints are as follows:

- The problem only occurs when either one RELative file and one SEQuential file or three SEQuential files are open at once and the new file is on side two.
- Corruption of data occurs after roughly 1016 bytes have been written to the new file.
- The resulting file actually contains only 5-7 blocks irrespective of the amount of data written.
- Immediately after the creation of the file the total block count (free and allocated blocks) is correct at 1328 but after a COLLECT or VALIDATE 'extra' blocks appear.

I'll be interested in your solutions

Avoiding the Problem

Impossible! As far as I am aware there is no way to prevent the problem occurring. However, in the example provided in the program, it is possible to successfully create the new SEQuential file on side two in a different manner with no corruption. This can be done by opening the RELative file and reading into the computer's memory as much as you need, closing the RELative file, opening the SEQuential file and writing the new information. If more data is needed than can be contained in memory one needs to perform this task several times and use the APPEND command to add each new batch of data to the end of the existing SEQuential file.

With compilers or assemblers the only solution is to insure that the compiled or assembled file stays on side one, or use two disk drives with the binary file going to the second drive.

People have suggested that there are some other problems with the 1571 but I have not personally found any other major ones. If you can document any I would be very interested in hearing about them.

We have informed Commodore Australia about the above problems and they are looking into it. However since all development is done overseas we will have to bide our time. There are rumours of revision ROMs for the 1571 but we have not received any specific information.

(c) Greg Perry, Brisbane 87

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Note: The editor of the above article was JMK.

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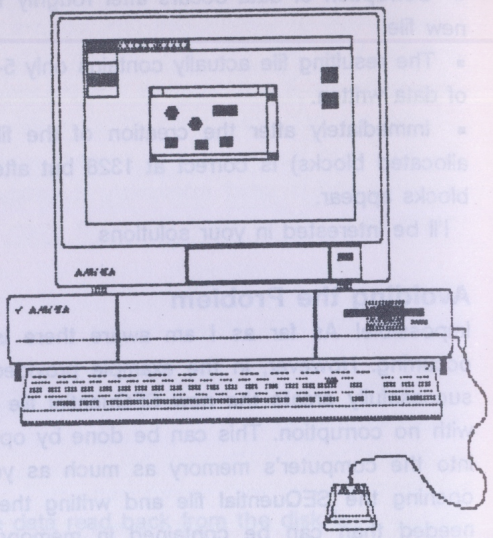

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COMMODORE 500/600/700

by Dave Viner

During 1982 Commodore announced several new machines, among which was the highly successful C64. The others consisted of two cut-down versions of the C64, the Max (or VIC-10) and VIC-30, and two up-market replacements for the PET - the 500 and 700 series. By 1983 the C64 had started to establish itself and the 700 had appeared in small trickles. The Max and VIC-30 were stillborn and, so it seemed at the time, was the 500. Just before the 1983 show Commodore announced that the 500 would be 're-engineered' to become a monochrome 80-column machine but not a lot more was heard about it.

So it was quite a surprise to see the Adwell's centre page advert in the November/December edition of the newsletter with 500s and 600s at a knock-down price of £75 (+ VAT). Up to that point I had only vaguely heard of the 600, so I phoned them for information and Geoff Turner gave me what scant knowledge he had of the machine, which was that it had BASIC 4.0, 128K memory (expandable to 256K internally), with an IEEE interface but no built-in screen. I decided to take the plunge during January, and ordered one.

It arrived in reasonable time and I connected it up into my existing PET/C128 system. After a week or so of playing around with it I sent off a list of 'discoveries' to Adwell who had indicated that they would be grateful for any feedback. They have since been passing out the list to prospective purchasers and some of these have contacted me for further information. One of these (hello, Dave) had contacted Adwell in the hope that they could shed some light on the 500 he had purchased and they had given him my phone number. He had bought his machine from another supplier who had bought over 200 Commodore 500s as a job lot. Through him I obtained a 500 for myself at an even lower cost (less than £40 - not bad for a machine initially priced at £695 + VAT).

What follows is a similar list to that sent to Adwell but with details about the 500 added.

1. The 600 appears to have been the replacement for the 500. It uses the same casing, with the exception of the back panel holding the connectors and the colour of the LED at the front - green for 500, red for 600. Keyboard layout is identical but the control key functions differ on the 500 because of the need to control colour.

2. The operating system of the 600 - Kernal and BASIC - is identical to that of the 128K 700 series (a copy of which was kindly sent to me a couple of years ago by Mike Todd) though the character generator chip is different, as the 700 had 8 or 9x14 pixel characters. When the system first powers up, it first checks to see if it is a 700 with a built-in screen (bit 7 set on $DF02 port) and, failing that, tests bit 6 to see if it is running at 50 or 60 Hz and sets the 6845 video chip accordingly. The code for this is at $E260. BASIC is at $8000 to $BFFF and the Kernal at $E000 to $FFFF with the I/O chips and screen memory at $D000 to $DFFF (all in bank 15). There are at least two sets of BASIC around for these machines. Firstly, the 128K system using RAM bank 1 for the program and bank 2 for all the variables. The second is the 256K system, which splits the variables up so that all integer and floating point numerics are in bank 2, arrays use bank 3 and strings use bank 4 - string arrays have the pointers in bank 3 and the strings themselves in 4. I suspect the Kernal remains the same for both types.

3. The 500 operating system is similar to the 6/700 except that programs are in bank 0 and variables in bank 1. The Kernal differs mainly where it accesses the VIC II video chip. As early specifications on the 500 indicated that it could come with as little as 64K there may be a version of BASIC around that holds both program and variables in the one bank. There may also be a 256K around version as well.

4. The ROM numbers for both my machines are:

	500	600
Kernal	901234-02	901244-03B
BASIC hi	901235-02	901242-02
BASIC lo	901236-02	901243-02B

The ROMs are, in fact, 2764 EPROMs sitting in adaptor sockets in the 600 and in an adaptor board in the 500. Adaptors are needed because the EPROMs are 28-pin and the sockets in the board are 24-pin for 2364 ROMs.

5. Even though there is a connection at the back for the standard Commodore cassette unit, the operating system doesn't know it exists. Any attempt to load or save to tape gives the error '?DEVICE NOT PRESENT'. It seems that, after adding all the coding that caters for the second processor and internal disks, there wasn't any room left to

put in the cassette coding. The electronics side of it appears to work properly, so it would be possible to put the code in either RAM or as an add-on cartridge. Anyone wishing to take the RAM option would have to master the art of running machine code in one of the RAM banks, as there isn't enough RAM in bank 15 to take all the required code - not an easy task but definitely possible (see below); they would also have to cope with the fact that all the cassette coding jumps through only one vector (at $036A) before going off to the error message. To determine which call was being processed through the vector would mean checking the return address left on the stack.

6. On opening up the machines you can see where the extra 128K of RAM is meant to go. Unfortunately the boards have been flow-soldered, which means that all the pin holes for the chips have been filled in and require an hour or two of de-soldering before the chips (or, if you're cautious like me, chip sockets) can be inserted. The chips required are standard 64K by 1-bit dynamics (4164, 4564, 4864 etc.) at around 150nS. Also needed are a couple of electrolytic capacitors (10 to 20 uF in the 600, 2 to 10 uF in the 500) and some 0.2uF decoupling capacitors. The electrolytics go just to the left of the RAMs (to the right in the 500) and the decouplers go in between each RAM bank. When the machines power up they check each RAM bank in succession by writing to EVERY LOCATION (non-destructive - the original value is restored after the write). As each bank takes around 2 seconds to be fully checked this means that a machine upgraded to the maximum possible 896K of memory would take over half a minute before the power-up message came up. For the 500 all the timings should be doubled as it has a 1MHz system clock, while the 6/700s were 2MHz but the 500 allows a possible expansion up to 960K instead of 896K (theoretically the 6/700 can go up to 960K as well by adding RAM in bank 0 but this will never be checked by the operating system which always starts at bank 1).

7. Even though the machines contain the 128K BASIC ROMs the Kernal can realise that extra memory exists providing it is contiguous - i.e. a system having banks 1 to 4 and 6 will not recognise bank 6. It uses the top of the highest bank found to place the function key definitions and the RS-232 input buffer. There is no RS-232 output buffer - each data byte is sent straight to the 6551 chip and then the system loops until either the byte has been processed or the STOP key is pressed. Other buffers are placed at the top of bank 1 (bank 0 in the 500) - these are the 160-character input buffer, the random number used by RND and various odd bytes used by maths routines. These are all located by

pointers in zero page (bank 15) and so may be shifted down if you need the memory for other purposes. When using the RS-232 channel the computer can be made to do automatic ASCII to PETSCII conversion, and vice versa, by using a secondary address above 127.

8. There is some annoying video interference on the 600 whenever the video chip is directly accessed by the operating system as it updates the position of the hardware cursor. This is similar to the 'snow' effect on the original old-ROM PETs when the screen was POKEd directly. In the 600's case, POKEing doesn't produce snow but ordinary printing does. It is best seen when the screen is reversed (type ESC followed by R) and a long listing is scrolled up the screen. I have written a small program that diverts the screen input and output software into RAM and reduces the interference by about 90%. It would be possible to reduce it by about 99% by implementing a software cursor as is used in all other Commodore machines except the C128 in 80-column mode but this means adding quite a bit of new code. At present I am not sure if this is just a fault in my machine or if all 600s have the problem.

9. The 500 doesn't have any video interference but has a very slow scroll speed. Considering that the C128 40-column screen has as much to do as the 500, what with handling windows etc, and does it about three times faster (500 processor clock speed is identical to a C128 in SLOW mode) the difference is entirely down to the way the operating system has been written. Upon investigation it transpires that whenever a character is written to either the screen or colour memory it is checked until it is stable. As both calls go through a RAM vector it is a simple matter to replace the checking code with code in RAM just to POKE the values and carry on without checking. This almost doubles the speed and does not give any problems whatsoever - a rewrite of the rest of the screen-handling routines would be needed to get up to the full possible speed. The offending screen routines are at $E641 (screen) and $E650 (colour memory) with the vectors at $03B7 and $03B9.

10. If you thought the C64 users' manual was 'naff', then the thing supplied with the 5/6/700s really takes the cake. It can't seem to make up its mind as to what the machines are actually called and sometimes refers to them as the B series or 128. The machines were known as the B256, B128 or P128 in America (Bxxx were the 600/700 series and Pxxx the 500 where xxx represented the memory size. The ESCape key table starting on page 40 uses both types of reference. Appendix D, the character codes table, is also quite interesting as it is actually for

the VIC-20. Most of the book just points out that you will find the information you are after in the Programmers' Reference Guide which, of course, was never produced.

11. Amazingly enough, the manual DOES contain full pinouts (with a couple of errors) of all the connectors, internal and external, which vaguely indicate how the memory can be expanded above the internal 256K and how possibly other processors could be added. Rumour has it that Commodore did produce an add-on 8088 board to run CP/M-86 on a 256K 700 system. I am trying to locate circuit diagrams for the machines in order to have a go at upgrading them further and would be grateful if anyone knows the whereabouts of such things.

12. The port marked 'User Port' in the manual is, in fact, the IEEE port using the same flat-edge connector as the PET. The User Port itself is internal and contains TWO eight-bit ports. At the time of writing I haven't determined their position in memory.

13. The TI$ clock (TI no longer exists) is a hardware-derived value from the TOD clock on the 6526 and is therefore not subject to the problems that the software clocks have on the C64/128. Unfortunately it is NOT zeroed at power up. TI$ is now 7 digits long with the extra digit representing tenths of a second. The manual gives a formula to calculate the equivalent value of TI from TI$ which turns out to be complete rubbish - multiply VAL(TI$) by 60!

14. RAM banking on the 5/6/700s is unlike that of the C128 where the bottom 1K of memory is never banked at all and the 8502 can only access the bank that is currently set up by the Memory Management chip. The 6509 processor handles all the banking itself and has two registers, like the 6510, at memory locations 0 and 1. Location 0 is the bank number - 0 to 15 ($0F hex) - currently active, and changing this immediately alters the bank, whereupon, if no precautions have been taken, the machine usually crashes, as the program the 6509 was running has instantly disappeared from memory. Location 1 sets up the bank to use for the two machine-code instructions LDA($--),Y and STA($--),Y (note that similar Indexed Y instructions such as CMP($--),Y and SBC($--),Y do NOT switch banks). This means that any location in any bank may be accessed from any other bank using these two instructions.

15. Running machine code in banks other than 15 is not so easy. Once bank 15 is switched out the machine loses all access to the ROMs including interrupt coding and the Kernal jump table, and also to the

RAM work area in zero page and above. However, there are routines built into the Kernal ROM that, once copied into the RAM banks, allow jumps to be made across banks via code transferred between the system stacks in each bank. It is a pity that it isn't automatically copied on power-up. The code is at $FE9D to $FF34 ($FEAB to $FF2C in the 500 - but see below) and, if used properly, maintains all the processor register values. By building a new Kernal jump table in RAM where all calls point to this coding it is possible to use Kernal calls from any bank in the normal fashion. The interrupt coding does, however, require rewriting to work properly. This method of banking has the advantage that you gain a completely free zero page and stack in each bank. The 6/700 can use the SYS command to jump to the bank set by the BANK command despite indications in the manual to the contrary. The 500 is, however, missing two small portions of code, one in the BASIC ROM and the other just before the bank switching code and, due to this, SYS will only access bank 15. The extra code required to enable it to access any bank is small enough to be placed in the 1K free RAM in bank 15 at $0400 (but I haven't tried it yet).

16. Although the manual does not mention it, the Kernal contains a machine-code monitor accessible by the usual SYS4. It is similar to the PET version but contains extra commands to switch banking, so all banks can be viewed or altered. Using the code described in the previous section above, I have managed to get the far superior C128 monitor working on the 600 from bank 3 and can now assemble and disassemble as well. Getting it to work on the 500 will require a bit more work but is not impossible.

17. When powered up, the 500 positions its screen memory in 1K of static RAM positioned at $D000 in bank 15. When using this bank it is possible to turn on the sprites but not to redefine theM. Hi-res also cannot be set up in this bank as there is not enough free RAM available. After much POKEing about I discovered how to transfer the video access into bank 0, set up the hi-res screen and properly define sprites. As with the C64, there are no specific commands to handle any of the special features of the VIC chip. Unlike the C64 the character set is freely accessible and doesn't require special banking POKEs in order to PEEK its values - it lies at $C000-$CFFF in bank 15. Note that the 6/700 cannot switch its video out of bank 15 though there was a rumour of either a hi-res or colour add-on for the 700 - whether it exists is anyone's guess.

18. The 500 has two standard joystick ports, which may be read by PEEKing locations $DC00 (fire buttons) and $DC01. The IEEE I/O port is also mapped at $DC00, so pressing a fire button when trying to load a program causes havoc! The 600 has occasional problems when trying to access my 2031 as this drive is sometimes too slow to respond to commands - the 500 has no problems (BASIC 2 PETs don't like the 2031 either).

19. As supplied, the 500s come with no TV modulator (and no monitor lead either). I obtained a second-hand VIC-20 modulator for £1 and this works perfectly although I had to remove its connector and hard-wire it in internally. The pin-out of the video port is NOT the same as described in the manual. Like the C64, it is an 8-pin DIN configuration but has either a 5 or 12-volt output on one of the extra pins (the voltage depends on the setting of an internal link - mine was at 5, which is correct for the VIC-20 modulator).

20. The BASIC, although labelled BASIC 4.0, contains several extra keywords over normal PET BASIC 4.0. With one exception, the DISPOSE command, all have since been implemented on the C128. DISPOSE only appears because of the possibility of running out of stack on these larger memory machines. The C128 (and the C16 & Plus/4) got round the problem by implementing a new software stack to handle the GOSUB, FOR and DO/LOOP requirements. One interesting item in the manual is the warning that DELETE with no parameters following it will delete the entire program. I am glad to say that this does NOT happen and the program will, in fact, remain unscathed.

21. I am in the process of compiling a complete set of memory maps and I/O configurations for both machines and am prepared to distribute these at a small cost to cover their production and postage to any ICPUG member interested. They will include listings of programs needed to implement or illustrate any of the points described in the notes above. If anyone wants specific points answered then please contact me - I will see what I can do. I am interested in obtaining dumps of the 256K operating systems (or any other versions if they have different ROM numbers to those listed above) in order to add them to the memory maps and would be grateful if anyone can help. I hope the notes will be ready around July. Also, if anyone wishes to purchase one of the cheap 500s then I will pass their name on to the supplier. I can be contacted on Norwich (0603) 401652 or use my address from the ICPUG Help register as published in the March/April edition.

GEOS: THE EXTRAS

by Roger Massey*

The number of applications that run under Geos appears to be growing almost daily, and it is this factor that made me decide to depart from my original intention of reviewing each one separately in favour of bundling several together in the one article: so here goes.

Fontpack 1

This is a disk containing 20 further text fonts for use with existing and forthcoming applications. The small manual supplied covers installation in the early pages, the latter part being devoted to sample printouts of the various fonts. These examples, we are told, were produced using Geowrite, but the printer used is not stated, though the quality of copy is reminiscent of the MPS 801 that I commonly term 'The thing on a spring'. Character styles of the fonts range from those suitable for use on business letters to the totally unconventional fun types, all bearing names associated with places or buildings in and around Berkeley. I find 'Evans' particularly amusing because this is composed purely of scientific symbols which make as much sense to me as Egyptian hieroglyphics, and one is left guessing which key produces the desired square root sign or whatever. Unfortunately not all of the characters obtainable on the computer keyboard have font equivalents, and not a single font contains a pound sign. However, what Fontpack 1 does do is allow a whole range of documents to be produced in varying styles to suit the occasion, whatever it might be.

Deskpack 1

This contains two new applications programs and two new desktop accessories. By title these are; Calendar, Blackjack, Icon editor, and Graphics Grabber respectively. This time the manual is of a high quality, clearly documenting how to use the programs in an easily understood manner. Blackjack is a very good implementation of the card game we normally refer to as Pontoon (or Vingt et Un) All The normal options for splitting hands, doubling up, and insurance against the dealer obtaining Blackjack (Pontoon) are offered to the player at the

*The shortly-to-retire editors have nobly resisted the temptation to saddle their successors with the title 'More of Massey's Murmurings'.

appropriate times, as well as hit (twist), and stay (stick) on the turn of each card. What makes this program unique is the windowing facilities of the Geos environment, play taking place at lightning speed. After several hours of entertaining play I managed to amass a few thousand dollars before retiring to bed, which goes to prove that the odds are not highly stacked against the player. Conversely, the computer plays a mean hand, thus ensuring that it is not too easy for you to come out on top. Although Blackjack does not do anything constructive, it does make a welcome change from the more serious applications programs.

Calendar

By complete contrast, the Calendar is probably one of the most useful desktop accessories to appear so far. When entered the calendar displays the month as last set by the preference manager, and because it is good practice to update the time and date as the first task following the booting of Geos, the calendar should always display the current month. From this point we can then page forwards or backwards through the months either by use of the dog-ear in the lower right of the window, or if desired move to any month in any year by means of a pull-down menu. A date can be selected by entering a number in the range one to twelve for the month, and four digits for the year. If only two digits are supplied for the year entry then the twentieth century is assumed, i.e entering 87 would select 1987. When a calendar month is displayed, moving the pointer to a specific date and clicking, will automatically open a datebook into which memos can be placed or erased, these later being stored in a file named 'datebook'. When a memo has been placed in one of the date cells, the cell is highlighted by an asterisk. Thus on paging through the months, appointments, birthdays etc are easily found. There is also provision for listing all memos, complete with dates, that are contained within this file. The calendar accessory is therefore capable of filling the role of notepad, and diary as well as its normal calendar function, and is worthy of inclusion on any of your work disks.

Graphics Grabber

Owners of Geos will already be aware of the fact that graphics can be included in Geowrite documents and text in Geopaint documents. The Graphics Grabber extends these facilities a little further by allowing the user to 'grab' graphics from other software products. At this stage those catered for are: Printmaster, Print Shop, and Newsroom. Artwork

once captured by this desktop accessory can be saved either in a text scrap, or in a photo album. Whole libraries can thus be built up for later use with Geowrite or Geopaint, or single graphics obtained on an as-needed basis for pasting into documents. Graphics Grabber can be run from a RAM expansion unit in conjunction with the forthcoming Geos REU kernal. In essence, any expansion RAM present is treated by this kernal as a RAM disk, but more on this in a later article.

Icon Editor

The final application on the Deskpack 1 disk allows the customisation of icons used to depict the existing applications and the associated data files, or it can be used to convert your existing programs on disk to Geos format. This conversion process does not alter the way in which the file is stored, but adds an extra block to its size. This extra block holds information about the particular file that is accessible by use of the desktop info command only, and is not readable using the standard Commodore directory command. Converted programs should not be subjected to the Commodore validate command, since this will destroy the link to the expanded header, and should not be copied with the normal DOS copy command as this will fail to reproduce the link. Geos has its own version of validate and copy. The process of conversion is reversible by means of the 'remove icon' option, which effectively removes the expanded file header, replacing it with the file's normal header block. As well as designing new icons the editor can be used to copy an icon across to another file or several other files. The editor works in much the same manner as sprite editors on the C64/128, supporting inversion, horizontal and vertical mirroring, and right, left, up, and down scrolling by a single pixel.

Writer's Workshop

The final package has been kept until last because in my opinion it is the best to be released so far. Writer's Workshop, so the box claims, provides all the tools you need for effective, efficient word processing, including text and graphics manipulation and multiple printing options. Writer's Workshop achieves these aims with the four applications that appear on the first side of the flippy type disk supplied. Geowrite 2.0 is an enhanced version of Geowrite that contains all the normal functions one would expect to find in a word processor. Four types of justification, variable line spacing, user-defined tab and decimal tab stops, subscript and superscript, headers and footers, search and/or replace, and the list goes on. Basically, Geowrite 2.0 is

similar in capability to programs like Easyscript but, with the added bonus of working within the Geos environment of windows and pull-down menus. It is from these menus that the various functions are invoked, although they can be accessed by keyboard shortcuts as well. Printing of documents offers the choice of high quality (default WYSIWYG), draft quality, and near-letter quality if your printer supports this mode. Unfortunately, graphics can only be handled by the high-quality mode, the NLQ must use a single font (Commodore 10 supplied), and in draft mode the printer's own character definitions are used and all text formatting is lost. More intersting features of Geowrite 2.0 are the ability to time and/or date stamp the header or footer of a document automatically, and page numbering starting from numbers other than one.

Geomerge is the mail-merge part of the package. Mail-merging is the process that allows the same document to be printed several times but with varying data for names and addresses etc. First, a merge document form is created using Geowrite. The difference between a document of this type and a normal one is that the data that will vary on successive printings (names, addresses etc) is not entered into the document, but replaced with labels. Labels are created by enclosing text thus; <<example label>>. Geomerge will then substitute data for the label from a merge data file as it prints the document, or prompt for text to be substituted for the label if manual mode is selected. In manual mode, when all labels have data substituted for them, the document is printed after selection of the desired print quality as for a normal Geowrite 2.0 document. Automatic insertion of data to replace labels is accommodated by first creating a merge data form, then selecting this merge data file as opposed to manual insertion, from the appropriate dialogue box. A merge data form is simply a list of data organised in a manner, such that for each label in a merge document form, there is a corresponding entry or carriage return in the merge data form. Basically, a merge data form is a document composed not as a normal letter, but of data (names, addresses and other details) arranged in an order that fits the labels in a merge form file, the latter being a standrard document but containing labels. Fear not, using Geomerge is a lot easier to use than it is to explain.

What makes the Writer's Workshop stand head and shoulders above the rest is probably its ability to interface to the very best of the laser printers. On the reverse side of the flippy disk is a driver for use with the Hewlett Packard Laserjet printer (also included on the last update disk), and on the label side, Geolaser. Geolaser is the necessary software that allows Geowrite 2.0 documents to be printed on

an Apple Lasewriter with the choice of two baud rates and other options. Financial constraints have not allowed me to test this application or the HP Laserjet driver, but I am confident that they perform more than satisfactorily. What Geolaser offers in reality is similar facilities to those found on the Macintosh desktop publishing packages, but at an affordable price (laser printer excluded), and on our Commodore 64/128's.

Text Grabber

OK, so now we have the WP package, the means of producing mail shots, and the necessary printer support facilities: the final application provides the rest. Text Grabber provides the means of allowing documents created on other word processors to be brought into the Geos environment. Once converted, they can be subjected to all the standard features of Geowrite 2.0, i.e reformatting, the use of the various fonts and styles, cut-and-paste graphics facilities etc. Conversion of your existing literary masterpieces is automatic, dialogue boxes and friendly prompts appearing when necessary. The process of 'bringing in' a piece of text created on another word processor is handled by files containing the necessary data to tum the original formatting instructions of the host word processor into those used by Geowrite 2.0. Paperclip, Easyscript, Speedscript, and Wordwriter are catered for in this manner. In addition there is a file that is designed to read text from any word processor into a Geowrite document, but the original text formatting instructions are lost. This is known as the Generic form.

To sum up, Writer's Workshop offers desktop publishing facilities at an affordable price, including the use of text taken from other word processor documents. Coupled with Deskpack 1, graphics can similarly be taken from other software packages for use in letters, or incorporation in our own artistic masterpieces. Icon editor allows complete conversion of existing non-Geos files into Geos format and the editing of icons belonging to existing Geos applications or desktop accessories. The calendar takes care of all appointments, birthdays and other anniversaries for a period of time that may well exceed our own existance. Not forgetting those moments of pure leisure - what better way to relax than to sit back and be hypothetically fleeced at blackjack. Geos, as it is collectively known, is growing and improving day by day.

--oOo--

REVIEW—BUTCHER

by John Grove

I was not quite sure what to expect when I was asked to have a look at 'Butcher' on my Amiga. Was this a program specially written for the meat trade showing stock levels of Lamb, Beef and Pork? Was it a program showing the victualling requirements of Hotels, Restaurants and the catering trade in general? I could have 'minced' on for ages about it being a 'beefy' program getting to the 'heart' of a butcher's business.

However, 'Butcher' is not remotely connected with food. It is a very useful collection of picture conversion routines intended for use with pictures created by paint programs and video digitizers which support the IFF (Interchange Format File) standard, as the majority of commercial drawing programs for the Amiga do. You cannot create pictures from scratch with it, although it does include some basic tools to help change and improve your existing artwork and pictures.

Features include the ability to change a picture from one display mode to another, change the number of bit-planes in a picture or merge pixels of one colour into another. Also you can change all the colours in a palette by pressing a single button. Many of these functions can be combined to produce special effects such as shaded pictures.

Butcher comes as a single disk with an easy-to-follow manual. It requires the 1.2 operating system and 512K RAM. Upon loading I was presented with five menus dividing the program into convenient sections.

The project menu includes the usual load, save, print, clear screen and quit options. It also includes a series of digitized pictures of early United States presidents, including such renowned statesmen as Abraham Lincoln and George Washington. I must admit I spent several fascinating hours experimenting on these gentlemen with the various routines, before dumping the results to my FX100 printer.

The second menu contains the tools. This gives the option to perform some basic drawing, reverse or flip the picture, use three different palettes or to make a palette.

Process is the third menu in which the image processing tools such as filter, edge, mosaic and intensity are to be found.

The convert menu has tools for measuring colours and manipulating pictures. Also the facility to chop colours or bit planes from your graphics.

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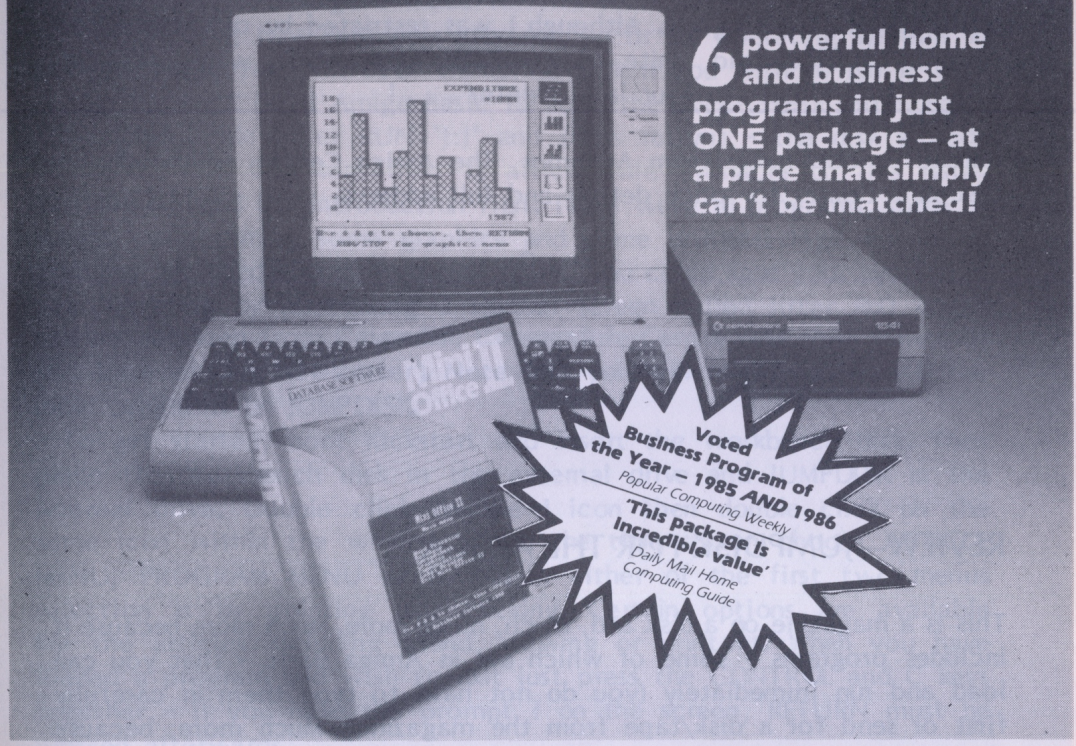
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ICP

The slice menu is used to convert pictures between video modes of different resolutions.

Altogether there are over 25 utilities available to the user. To give an in-depth review of each function would take up far too much space in this newsletter. However, I hope that I have written enough to show the potential of this program. Although I was restricted by only being able to print in black and white on my FX100, the results were excellent. Now if only I had a colour laser printer . . . !

Butcher is obtainable from Arithmos, The Amiga Centre, Edinburgh. See Discount Comer for price details and full address.

--oOo--

REVIEW—JUMPDISK FOR THE AMIGA

This is a magazine on a disk and, much, much more. Much more because it includes programs - some of which are in Amiga Basic - that you can load and run immediately (you do not have to type them in carefully first or send for a disk/tape from the magazine). Much more, because the articles are available on the screen or can be heard (whilst being shown on the screen line by line) or can be printed out. In fact you may print out all the articles in one go or one at a time. But I have not tried this since my wife tells me I produce too much wallpaper already.

The disk is supplied in a folded plastic wallet with two inside pockets, one for the disk and one for the covering notes. The outside of the folder displays the name, a coloured design and lists the contents.

The April issue, the one that was sent to me for review, was easy to load. The instructions, which were printed on one side of A4 paper only, included an illustration and a short list of the main contents, together with the address of the originating company in the USA and the name and address of the UK distributor. The product is properly

guaranteed in that, should your copy be corrupt in any way, it will be immediately replaced and your postage refunded. Even if you do manage to corrupt the disk accidentally the UK distributor will recopy from his master disk onto your disk if you retum your corrupted one in a stamped SAE. No charge is made for this service.

When running JUMPDISK you may use 1.1 or 1.2 operating systems in text 80 mode, you will need the Extras disk if you wish to run it with Amiga Basic 1.2 (load Amiga Basic 1.2 form the EXTRAS disk and in Basic immediate mode enter RUN "J:J" and press retum) - the disk already contains Basic 1.1. More than 12 articles are avialable on this issue. You should read the introduction first. There were 10 programs, some of which were games, some graphics and some utilities. High resolution graphics are used and in some programs. You could save your eyes from the flickering by purchasing a special screen called Jitter RID which can be obtained from Cavendish Commodore Centre (see their advert in this issue of the Newsletter). Note that you will require 512K RAM for most programs on JUMPDISK.

To get started, boot Kickstart and insert the workbench disk. Then place the Workbench disk in the extemal drive and JUMPDISK in the intemal drive. Double click on the J icon then double click on the same icon within the window. From the title screen choose ARTICLE MENU, PROGRAM MENU or BASIC. In either of the first two menus selection is by pointing and clicking. Certain options are available for the articles including sound, viewing or printout. When you have loaded a program and wish to exit just press the CONTROL and C keys together - if you have the prompt ? on the screen, RETURN must be pressed afterwards.

Articles include 'the editor's two cents', new product reports (this month there are details on the A2000 and the A500), 'readers' forum', program reviews and documentation about the programs on the disk with explanations on how to run them.

Programs vary from the simpler graphical types, through complicated graphic mobiles to games. This month there is an excellent game of Blackjack in high resolution complete with spoken commentary: it is so good this article took longer to produce than it should have! There is only one slight adverse comment to be made on this otherwise excellent product: the display does not extend down to the bottom of the screen even though system 1.2 was used. Maybe the US company could produce an edition to cater for us PAL people.

--oOo--

FORTH—A SHORT APPRECIATION

by Richard G Hunt

Many will know that I copy disks for the ICPUG Plus 4 library. Some, mainly those in the South East who have had the good fortune to meet me, know also that I am an afficionado of the language FORTH. Some fewer may have made the connection between the latter and the fact that a (deficient) version of Forth is available for the Plus 4 from me. New members who have written to me for library details have received a standard letter (Oh! the joys of wordprocessing) indicating that. Imagine my surprise then when someone wrote and asked what Forth is. Let him forgive me for expressing my surprise, for it is undoubtedly time for me to remind members old and new (Amiga owners block your ears, cover your eyes and think only of C) of the best, most fruitful and philosophically satisfying computer language ever to see an 8-bit (or larger) bus. Ron Geere started a series of Forth articles a few years back. I wrote a series published in Commodore User and the ICPUG South East magazine, but alas it appears that interest always remains scanty.

First, the history of Forth. It was invented around 1970 by one Charles Moore who wished to make his programming output more productive. He produced a Fortran program which did just this and in those far off days of third generation languages he saw it as having aspects of a fourth generation: Forth code looks like English, and can be constructed in more free-form ways than any existing computer language. Alas, the system he used could only accept 5-letter filenames: hence FORTH without the U! (I wonder how much of this is now apocryphal?)

Forth is sometimes called a 'threaded, interpretive language' (TIL). This is merely a reflection on the way Forth code is structured in machine code. Forth consists of a dictionary of 'words' which are similar I suppose to BASIC statements but are fundamentally different in that, unlike BASIC where a statement must be 'crunched' and then interpreted, Forth words are already compiled. This speeds up execution and runs Forth at much faster speeds than interpreted BASIC. In some instances speeds up to 80% of processor speed are claimed. A mere factor of 10 over BASIC is usually enough though! Forth also is extensible. This makes it about the only way of creating a standard non-standard language. You start out with the dictionary Forth provides and write more words and make modules or families of them that extend

the dictionary and its capability. What you have then is your own individual language. You can even re-define existing words so that they run the way you want them to.

Forth has some features that are both fundamental and different if all you have seen is CBM BASIC. Forth relies on or even insists on the programmer keeping control of what is processed and when. Data has to be passed to a stack so that Forth's arithmetic functions can access it. Variables are just not used in the way they are in BASIC. One of the results of this is that Forth requires infix or Reverse Polish Notation. Forth also uses integer arithmetic with 16, 32 or intermediate precision. All numbers can be formatted, so representing decimal places is no problem.

I mentioned above that Forth is philosophically satisfying. It is indeed a way of thinking that I maintain is positively benign towards any approach to a programming problem. Forth imposes structure rather than accepting structure. Therefore programming starts off with top-down design and ends up with modular construction. Only if you have spent some considerable time 'getting into' Forth will you begin to understand what I mean. It is an enlightening process.

There are several books on the language that I can recommend for beginners. 'Starting Forth' by Leo Brodie (Prentice-Hall) is the first and perhaps the best introduction. 'The Complete Forth' by Alan Winfield (Sigma Technical Press) is a very good alternative. Leo Brodie has written a sequel called 'Thinking Forth' which takes one into more advanced spheres.

Forth is an excellent language to learn at whatever stage of programming you are. There is a story that an elementary programming class was split, half learning BASIC first, the other half learning Forth. Each half was then taught the other language. The BASIC group was reportedly indignant that the others were so far ahead. The Forth group saw no point in learning BASIC and did not.

This is what Forth looks like. Forth is organised into screens or blocks of 64 columns by 16 rows (1K exactly). New words are defined within a 'colon definition' which starts with a colon and ends with a semi-colon. These are directives to the compiler to begin and end compiling. A new word is defined in terms of existing words and may then in turn be used in another definition. Below is a small 'program' that obtains input of a number from the keyboard and displays a 'times table' duly formatted.

```
:     INPUT  0 0 CR ." >" QUERY 1 WORD HERE (NUMBER) DROP DROP ;

:     CHOSE  ." WHAT NUMBER? " INPUT
        ." TIMES TABLE IS :" ;

:   TABLE  147 EMIT CHOOSE CR CR CR
         13 1 DO DUP DUP I 2 .R SPACE
              ." TIMES " .
              ." =" I * 1 U* 5 D.R CR
            LOOP ;
```

To someone who doesn't know how to read Forth, that is pretty nasty stuff. There are ways of making it read like English, if necessary. For example TABLE could have been written (providing the necessary redefinitions had been made):

```
:   TABLE  CLEAR-SCREEN CHOOSE 3 CARRIAGE-RETURNS
         11 1 DO-LOOP DUP DUP COUNTER 2 FORMAT-PRINT SPACE
              ." TIMES "  PRINT
              ." =" COUNTER TIMES 1 U-TIMES 5 D.FORMAT-PRINT CR
            END-LOOP ;
```

That is perhaps clearer but Forth does have words that defy a single English word definition. For example, U* multiplies two numbers and leaves an unsigned product. D.R takes a number and displays it right aligned in a field of the given width (5, in our example). Note also how we had to define INPUT before we could define CHOOSE which uses it, and CHOOSE before TABLE. Each individual word can be defined, tested, edited and re-tested before being put into another word. In that way a programmer can be absolutely sure that it works the way it is meant to and tiresome debugging time can be kept to a minimum.

I do not propose to take Forth any further at this point. Forth, in the version (or standard) issued by the Forth Interest Group (FIG) is available on most popular machines. I am (still) working on an implementation for the Plus 4. If there is any interest among members in Forth I may be prepared to offer some more articles on the language but in the past the response has been definitely underwhelming. Let me know what aspect(s) interest and I may then try to gather them together in these pages. Perhaps the Editor may consider a re-run of my earlier articles for South East, duly updated.

I await your collective response (address inside back cover).

PANDEMIC PASCAL

by Marc Bray*

As you can see, I have taken note of the recent articles complaining of an excess of 'Comers' in the Newsletter. So out came dictionary and up came the name 'Pandemic Pascal'. What, I hear you ask, is the meaning of Pandemic? Well, according to my dictionary, Pandemic means 'an infectious disease of worldwide distribution'. This, I think sums up PASCAL very well.

I should like to take this opportunity to apologize for not having an article in the last Newsletter. This was all due to Christmas, a surprise skiing holiday in Scotland, and the build-up of a lot of College work. (I am a student at Liverpoool Poly where the lecturers gave us, as a Christmas present, a load of course work to be handed in immediately after Christmas.)

I hope to make up the loss of the last article in a big bumper section this time. There is a lot to cover, especially with the emergence of JRT Pascal in the ICPUG library, which all of you with C128s will by now have a copy of, and be busy writing programs with.

Speaking of the Pascal library, not very much has been happening in this area at the moment but, as I keep on saying, send any programs you have written to me, as soon as possible. Once again, we are supporting JRT Pascal, Oxford 128, Oxford 64 and First Publishing's version. Donations on disk or tape, as far as possible. Only send listings if absolutely necessary. Also, please send retum postage and packaging if you want your disks and tapes retumed. Address, as always, at the end.

So far, apart from my own programs, only one other program has been donated. This program is used in a Scottish school by Jim Connachan to print out Sine and Cosine Tables. The programs I have, or hope to have included in the library are various routines to manipulate matrices. For example, there is a program to multiply two matrices and another to reduce a matrix to Row-Echelon form. I also hope to include a program that will numerically give the roots to non-linear equations. The program has been written and debugged. The problem at the moment is how to produce the documentation. I thought about putting it on an Easyscript file, but I don't know how many Pascal users are already using Easyscript. If you write to me, perhaps you could let me know if you are using the wordprocessor, to help me make up my mind. The

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problem with the documentation is that there are various mathematical symbols, superscript and subscript characters included, that require Easyscript, to print them out correctly. Whilst on the subject of using user-defined characters with Easyscript, I have designed a whole superscript, subscript, Greek character set and mathematical symbol set for the MPS802. If anyone wants a copy, send me a disk at the address above. I have not tested it with an MPS801/803/1000, but do not think that it will work on them as it stands. If you have an MPS801/803/1000 send for a copy and alter it to your own specifications, return it to me, and I will circulate it for these printers.

Printing the JRT manual

On to the subject of printing CL3, the JRT Pascal manual. It is written for printing under Wordstar. Jim (previously mentioned) also wrote, giving instructions for deleting these commands.

1. SETDEF[NOPAGE] and type SETUP
2. EDIT3 A:xxJRTPAS.MAN
3. +6k <ESC><ESC>
4. Look for other embedded commands and use 'k' to delete.
5. E<ESC><ESC> to leave editor and save amendments.
   Q<ESC><ESC> will leave editor and not make any alterations.

This uses the program EDIT3.COM to edit files. If you are using ED.COM or EDIT3.COM to create files under CP/M, then see below for news of a brilliant new editor in the ICPUG CP/M library.

Initial comments on JRT Pascal are that it is very slow. With the 1541 I am using it really is painfully slow. In terms of ease of use, my marks would go to the Oxford 64 and 128 Compilers. I am persevering with JRT because it is the 'free' version from the library, whereas Oxford 128 costs £50.

I would still recommend JRT to anyone wanting to use PASCAL professionally, though not with a 1541, unless patience is your long suit. I am writing to Evesham Micros to see whether Dolphin DOS will speed up the 1541 in CP/M mode - watch this space.

There are currently another couple of CP/M Pascal Compilers. These are TURBO Pascal and Hisofts' Pascal80. Jim has sent for a copy of Pascal80 and has promised to send me a review when he gets it. When I receive the review, I shall include it in the next available article. As for TURBO Pascal, Grey Matter of Ashburton have at last replied to me and sent lists of a number of CP/M packages - for details see my next article also. Watch this space for more on TURBO Pascal, and if

anyone has it already, please write in with a review and let me know how you are getting on with it.

Bugs

Michael Renton (London) has written to me pointing out some bugs in Oxford 64. I list them below, but I have not had time to test them.

Bug#1:

In disk mode, the first Write('xxx'); gives out a spurious carriage return, looking as though the command WriteLn('xxx'); was used. Thereafter it works perfectly, leaving the cursor on the output line.

Bug#2:

Null strings seem to be a problem. If you wish to print a carriage return, in other versions of Pascal, you can WriteLn (' '); or in file mode, WriteLn(outfile);. Oxford Pascal does not like WriteLn (' '); , but WriteLn (outfile); seems to be OK.

On telephoning the supplier (I think) of the software, Michael was told to expect bug-ridden software, and the only helpful comment he received was 'to buy the BBC version'. Does anyone else have any other stories like this? (The best comments will form the basis of a non-Pascal article in the future.)

Stephen Earl, in Oxford, has written to say that on Oxford 64, the 'Getkey' command may fail if reading disk files. Typing POKE(153,0) before the 'Getkey' command resolves this problem.

Version 2.0 of Oxford Pascal has a number of bugs - version 2.1 is now available from Oxford Computer Systems - see my next article for details of the bugs. After telephoning them I received my new copy by return of post.

New CP/M editor

As promised, news of the new CP/M text editor. If you are still using ED.COM or EDIT3.COM, you must not yet have seen ICPUG disc CL4. On this disk is another text editor, called VDO.COM. This is a full-screen text editor, and is similar in operation to the editor on a Hewlett-Packard 1000 computer, or the Commodore screen editor.

I would certainly recommend that, if you are finding ED or EDIT3 as difficult to use as I found them, you get a copy of this disk and start using VDO.COM. From now on, until a better editor comes out, I do not intend touching ED or EDIT3 again, unless I have to.

When sending JRT Pascal programs, please include both the source code and the object code. Source code has the extension '.PAS'; object code has the extension 'JNT'.

Info wanted

S Ghanbarzadeh, from Ealing, would like to know whether anyone has a Pascal or machine-code routine for generating random numbers for JRT. BYTE, March 1987, had a routine for generating pseudo-random numbers. Does anyone have a routine for true random numbers?

Correspondence

For personal replies, send me an SAE. Depending on College work, it may take me up to a month to reply, so please be patient. If you require an urgent reply, write urgent on the letter and I shall try to reply as soon as possible.

I have some ideas for future articles, and I would be grateful if I could have some response to see whether they would be suitable. They are:

PASCAL Programming course

Reviews of the compilers currently supported

Any other ideas would be greatly appreciated.

--oOo--

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Super* Corner

edited by Jim Kennedy

8 Bit Superbase Programming Tips

When editing a Superbase program you can get back to the line before by pressing the backarrow key. This will save lots of cursor key activity especially on long program lines. Another tip is when you want to get to a line in the middle of a large program clear the screen by SHIFT CLR/HOME and then type PROG 2340, for example, to call up program lines starting with 2340 at the top of the screen. These two tips save lots of program development time.

Superbase: The Book - Errata Sheet

Below are some errors to correct if you have this really good book.

1. pg 30-31 missing words:
...output or other processing. You can copy, rename, or delete lists.
Memos
These are created with the memo option. They...

2. pg 154 line 20: File 'data'

3. pg 149 line 60: insert after file 'old' and before select n:
:select a$:

4. pg 101-102 missing words:
...update the invoice file to make the new invoices show a status...

5. pg 136 bottom: 10 PRINT CHR$ (27);CHR$(14)... not 10 PRINT = CHR$...

6. pg 102 & 103: Line 80 appears twice.

7. pg 23 add following:
Illegal characters list = # - @ < > / & " [ ] ( ) for both field names and contents.

8. pg 29: Several lines are repeated on pg 30.

9. pg 138: Program has CR$ = CHR$(13) missing.

10. pg 27 & 28: Renumber second guideline #3 and all subsequent ones.

Dates as Key Fields by Month and Day

Sometimes one wishes to store records by date but irrespective of the year for things such as birthdays. For example, one file with a key field of [lastname] could have birthdates in the usual Superbase format of 13Jun87. Suppose one wants to make another file with the records stored (keyed) in the order 12 Jan 45, 14 Jan 36, 23 Jan 65 etc and, of course, we wish the key to be unique to avoid the problems which duplicate keys lead to. Also assume the birthdate is a field titled [birthdate]. We must convert this date, which is stored as a number, to the new format and store various other bits of information in the new file.

```
10 file "lnamelist"
20 select f:goto 100
30 ln$=[lastname]
100 x = 65:rem set for ASCII no for letter A
120 dt = [birthdate]:rem read in birthdate as stored in numerical form
130 convert dt,dt$:rem convert the date to string form
140 da$ = left$(dt$,2): rem extract day of month numbers
150 mo$ = mid$(dt$,3,3): rem extract month abrev
160 date dt$,m:rem find out which month by number ie xx=m
170 if m<10 then mn$="0"+right$(str$(m),1):else mn$ = right$(str$(m),2)
180 yy$ = right$(dt$,2):yr$ = "19"+yy$:rem extract year abrev number
190 file "bdaylist":rem call new file
200 ky$ = mn$+da$+yy$+chr$(x):rem build key string eg 012254a for 22 Jan
210 select ky$: rem see if key already exists
220 pmat goto 300: rem if partial match then ok to store
230 nmat goto 300;rem if no match then ok to store
240 x=x+1:goto 200:if match then increment to 012254b and try again
300 clear:rem create blank record
310 calc [lname]=ln$;[day]=da$;[month]=mo$;[year]=yr$;[key]=ky$
320 store rem store the new record
330 file "lnamelist":select ln$:rem go back to same record in old file
340 select n:eof menu:rem move to next record
350 goto 30:rem repeat process for next record
```

Also see a similar routine by John Barrs in the Amiga section below. It seems John and I are always writing similar routines independently of each other.

POKE'ing in 8 bit Superbase

Paul Blair from Australia (we seem to have a lot of 'Sports' involved in this issue) contributed some information about the POKE command in Superbase.

Although the manuals says that POKE is not allowed, Paul found a use for it. This came about because one of his friends backs-up his Superbase data disks on his 64/8250 combination using a purpose written program which transposes files for him - today's summary becomes tomorrow's starting balance, and so on. But in doing so the system waits for him to answer 'Y' at just enough places to be tiresome.

The 'fix' is simple, before (note - before) the line that requests confirmation as part of the internal process, POKE 'Y' and a carriage return into the keyboard buffer. How? Use PERFORM (or DO in the earlier versions) and there is no need for the program to pause. Paul's example program is

```
10 rem Demo of POKE in Superbase with DO/PERFORM
20 rem this example answers 'y' (ascii 89)
30 rem note that REM can be used on same line as PERFORM
40 rem for C128 (with C64 use values shown in REM statement)
50 rem by Paul Blair, May 87
60 perform "poke 842,89": rem 631 in c64
70 perform "poke 843,13": rem 632 in c64
80 perform "poke 208,2": rem 198 in c64
90 ask @2,2"Which one ";a$
100 display @2,4a$:wait
```

Of course, there are probably thousands of other ways of using POKE. But be careful - unless you know every little last thing about how Superbase stores things you could clobber some vital location. Test first.

Amiga Superbase Tips

John Barrs, who runs the Amiga Superbase technical support operation at Precision Software Ltd. has furnished some notes for Superbase on the Amiga. He has also included some of the 'workarounds' and other helpful hints for users who wish to do certain operations in unusual ways. Registered users may also contact John on (0428) 725 400. I understand that 1.046 is due to be released shortly. John's notes follow below:

How to use System-Reorganize

Reorganize: Given a database file called 'xxx' then on reorganize, anything that you enter into the 'destination-device requester' is appended to the original filename. So if you specify 'aa' then the reorganized file is called 'aaxxx' in the current directory; if you specify 'df0:' then the new file is called 'xxx' and is reorganized to the disk in drive df0. Caution, if file 'xxx' is currently on df0 then corruption will occur; if you specify 'mydisk:testdir/' then file 'xxx' is reorganized

in the directory 'testdir' on disk 'mydisk' (again this must not be the directory in which file 'xxx' currently resides). Obviously the resultant filename must conform to AmigaDOS filename/pathway conventions. Problems can arise if you are not opening the files in the current directory ie, you are using a pathname to open a file rather than using the menu option SYSTEM-DIRECTORY-CHANGE. This could happen if you open a file 'xxx' on df1: by entering 'df1:xxx' to the open file requester and then try to reorganize it to df0: then the resulting pathway is 'df0:df1:xxx' which is of course an invalid AmigaDOS pathname. Of course, the target disk must be formatted.

Logic and Filters

Some users are reporting problems with getting their filters to work properly when they are using multiple ANDs ORs and NOTs. I suspect that some at least of these problems are related to a failure to fully understand the logic implied when using logical operators in statements. The easiest way to see the effects of a logical operator is to consider the truth tables involved in the tests. Any logical expression has the value 1 or 0.

A Truth Table for the Logical Operators used in Superbase follows:

TRUTH TABLES		DEFINITIONS
AND	0 AND 0 = 0	AND has two inputs,
	0 AND 1 = 0	only where both inputs are true
	1 AND 0 = 0	is the result true
	1 AND 1 = 1	
NOT	NOT 0 = 1	NOT has one input,
	NOT 1 = 0	the logical state is reversed
OR	0 OR 0 = 0	OR has two inputs,
	0 OR 1 = 1	where either input is true, then
	1 OR 0 = 1	the result is true
	1 OR 1 = 1	

When an expression contains several operators and operands then the expression is evaluated according to a chronological order of obedience. Enclosing an expression within parentheses will promote it to the top of the hierarchy, ie, the part within the parentheses will be evaluated first and then treated as a single operand. But, where there are no parentheses (or in a subexpression within parentheses) then there is still a hierarchy. Basically, the rules are as follows:

1) NOT is performed before AND and OR is performed last.

2) Where identical weighted operators are concerned evaluation will be from left to right.

Parentheses may be used to produce nested expressions up to 32 deep (i.e. you may have really complicated expressions with up to 32 left parenthesis next to each other). To see the effect of using parentheses consider these examples.

Investigate the difference between (A AND B) OR C and A AND (B OR C). The first will pick 5 out of the 8 possibilities, while the second will pick only 3 out of the eight possibilities. The truth tables for the two examples are given below:

(A AND B) OR C					A AND (B OR C)				
A	B	C	A AND B	result	A	B	C	B OR C	result
0	0	0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	1	1	0
0	1	0	0	0	0	1	0	1	0
0	1	1	0	1	0	1	1	1	0
1	0	0	0	0	1	0	0	0	0
1	0	1	0	1	1	0	1	1	1
1	1	0	1	1	1	1	0	1	1
1	1	1	1	1	1	1	1	1	1

Amiga Superbase Manual Errata

The Amiga Superbase Manual page II-88 should read as follows:

QUERY OUTPUT DESTINATION

You select the destination for query output by clicking on the appropriate button.

OK Unless any other button is selected, this directs output to screen

The next three buttons described direct output to another media

PRINT This directs output to the printer

DISK This selection creates an ASCII disk file containing the query output. The output is formatted as if it were being printed, so provided the file is not too large for your word-processor, you may be able to load and edit it just like an ordinary text file.

FILE This selection creates a new database file. The file definition will include the fields that you specified in your query, including any 'derived' fields. Superbase automatically indexes on the first indexed field specified, or if no indexed field was specified then the index is on the first field specified, so if you want any other indices you will have to create them.

Superbase ignores any formatting or reporting elements in the query.

If you included fields which were calculated fields in your current file(s), then you must do one of two things: either include the fields upon which your calculated field depends, or make the calculated field into a derived field by enclosing it in parentheses and giving it a name by using the AS parameter. Any field which is derived but not named will not be included in the new file. Any name included using the AS parameter must conform to Superbase Fieldname rules.

In the case of DISK and FILE you will be asked for a filename. This filename may include a path to another directory, and must conform to AmigaDOS rules. In the case of DISK you will be asked to confirm replacement if the file specified already exists. In the case of FILE the file specified cannot already exist.

Notes on Dates and Sorting by Birthdays

Some people may wish to order a datefield so that the dates come out year independent. The obvious application is locating birthdays, ie you want to find all people who have birthdays on January 17th regardless of which year they were born in. The simplest answer is to create a new calculated field for each record; make it numeric 9999999. (leading and trailing spaces) and then make an appropriate calculation such as:

MONTH(datefield) * 10000 + DAY(datefield) * 100 + YEAR(datefield) - 1900

What this has done is to store the dates in a numeric field as mmddyy (suitably multiplied so that dd mm yy retain their separate identities) so all 01 months precede all 02 months, but all the days are in order inside the months and the years are in order inside the days. If you want some other order, then this type of procedure can be carried out with the appropriate calculation.

Of course, If you add this field to an already existing file, then you will have to resave each record to get the new field saved, but, no sweat, just update all records with an update command of

newfield = newfield

While I am on dates, there are some other nice little points that could be useful. The valid range of the date functions in Superbase Personal is between the first day of January year 0001 to the last day of December year 9999 ie a julian day range of 1 to 3652048. While (of course) we cannot cater for any future calendar reforms, the Calendar adjustment of 1752 has been accounted for, ie 02/09/1752 is followed by 14/09/1752. Of course, you must realise that dating is not historically reliable before the 14th century. Superbase will always give you the same answer, but I wouldn't like to guarantee that 12/11/1102 was a Saturday!

If you are dealing with dates outside this century, you will need to set your date format to include a four character year to ensure that the date is stored correctly, and if you are dealing with dates below 1000 the year will show as only the required number of digits. If you wish to line them up with other dates then you need to have the year showing with leading zeros. This can be achieved by having another datefield calculated as the date plus 3652414.(This will only work for dates before 02/09/1752, after that it is 11 days out and you have to add 3652425).

Some business functions require to know the day of the year. There is an undocumented and unsupported bug in the DAY function which can be used to return the day of the year. If you use DAY with a negative argument then the day of the year is returned ,or almost; you need to subtract a further 11 days from it, so the calculation required is:

ABS (DAY(datefield) - 11)

More on Amiga Superbase next issue.

DISABLED COMPUTER USERS

David Bate, the Disabilities Liaison Officer, has continued trying to locate computing aids for the disabled without success, and certainly nothing specifically for Commodore equipment. He feels there would be a market for some enterprising UK entrepreneur to make a killing.

He would be pleased to hear from any disabled member(s) as to what their disability is and how it affects their ability to compute. Send an SAE if possible. (His address is inside the front cover.)

SUPERSOFT FOR PET....

We have a large quantity of PET equipment, including such unusual items as the SuperPET 9000, 9060 and 9090 disk drives, and the 700. Of course we also have more common machines such as the 4032,8032, 8096, 4040, 8050 and 8250.

Most items are reconditioned (we give a 3-month guarantee), but we do have a few new machines, in particular some recently acquired 8296 computers and MPP-1361 dot matrix printers.

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WE EVEN HAVE PROGRAMS FOR C16 & PLUS/4

PET UPGRADE

by AD Lock*

[This article was submitted 2 years ago but was misfiled and mislaid. The author waited patiently until quite recently before drawing attention to our negligence. We publish it now with apologies. As the modifications do seem fairly heroic, we have given Tony Lock's address at the foot of the page - it does seem just possible that anyone wishing to follow in his footsteps might wish to consult him - Ed.]

In the January [1985] issue of the User Group magazine you published a previous letter from me concerning the apparent lack of support for the PET/CBM machines. I recieved a number of letters in support of the views previously expressed, and would like to thank those who wrote direct to me. I previously asked for information how to upgrade my machine to 80 columns. I am pleased to be able to say that as a result of information received indirectly I have now converted my 4032 to a dual-standard switchable 40/80 column machine.

In order to carry out the modifications I have added additional screen RAM, and associated gating, to the existing board by the simple but perhaps crude process of soldering the new I/Cs across the existing ones where possible, and then adding hand wiring to the appropriate parts of the board. I have also fitted sockets to those I/Cs where it is necessary to isolate pins from the original tracking and simply bent the I/C pin horizontal to avoid cutting any tracks. By using this technique I believe it is possible to reinstate the original circuitry without too much of a problem should I ever wish to do so.

Before embarking on such a series of modifications it was necessary to obtain an accurate copy of the circuit diagram since the PET REVEALED circuits are not correct. I managed to obtain the service documents for PET from a 'friend of a friend' and from another source I found an 80-column service sheet. These enabled me to design the necessary changes to the logic.

To convert to 80-column mode it is necessary to increase the clock speed for the dot clock from 8 to 16MHz. Conveniently, the clock oscillator runs at 16 MHz so an output from it is selected, using the feed from pin 6 of gate G1. This is routed into a new 74LS157 which acts as a changeover gate, and the existing 8MHz clock to the video

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selected, output is then used to clock the shift register, either at 8 or 16MHz (fig 1).

Unfortunately, due to the very tight timing constraints it proved to be necessary to alter the phase and width of the clock pulse when operating in 40-column mode. This was achieved by using a resistive/capacitive network and additional gating using a 74LS10 logically to AND the 8 and 16 MHz waveforms. It was also necessary to alter the type of shift register I/C from an original 74LS165 to a synchronous loading 74LS166.

To generate the LOADSR signals for 80-column mode I used a 74LS86 exclusive OR gate with the inputs taken from B02g and B02h lines out of H3 pins 12/13. The original LOADSR and its complement from the outputs of G9 pins 5/6 were rerouted to input of the 'LS157 changeover chip together with the newly generated signal and its inverted complement from the output of the exclusive OR gate. Drive to the clock of H7 pin 9 was taken from the output pin of the changeover instead of direct from G9 pin 6 (fig 2).

Screen Ram Address decoding on the original 40-column machine is incomplete giving addresses 8000-83ff and images 8400-87ff. It is necessary to alter this to decode the screen fully into 2 separate 1k blocks. I achieved this by removing the I/C at A5, fitting a socket and wiring in a 74LS138 decoder instead. I also made use of the spare part of the original A5 I/C to route those signals necessary for the decoding to be achieved. Mechanically, this part of the mod was achieved by mounting the new '138 over the top of the original I/C A5 and hand wiring the appropriate connections (fig 3).

Screen Ram Address changeover was accomplished by firstly removing carefully the three I/Cs F5, F6, F3 and fitting sockets. New 74LS157s were then mounted onto the top of the existing '157s with certain pins interconnected to provide the necessary changeover options. This involved isolating the original BAx lines and routing them through the new '157s and back into the BAx inputs on the original I/Cs. The BA0 line is routed to the address decoding in 80-column mode to carry out the changeover from ODD to EVEN RAM (fig 4).

New Screen RAM chips were mounted on to the top of the existing Screen RAM and new 74LS244 buffer chips and a new 74LS373 latch were added in a similar manner. Interconnections were made by a combination of both hand wiring and soldering appropriate pins together on the original and new I/Cs. Latch enabling was derived from CLK1 and its complement in 80-column mode or from a permanent 0/1 when in 40-column mode. The original TVREAD and TVWRITE signals were modified to become

outputs from the new address decoding and are TVREADEVEN, TVWRITEEVEN. The companion signals TVREADODD TVWRITEODD are used to enable the new latch and new buffers as appropriate (fig 5).

Finally, as already mentioned, the Shift Register E11 is replaced by a 74LS166, which involved mounting the new chip on a header and cross connecting the appropriate pins. The replacement chip is of course not compatible with the original pin layout.

The overall modification process has taken many hours and has necessitated the use of a dual-beam wide-bandwidth scope to be able to see the relative timings of critical edges, and I was very fortunate in being able to borrow one from the saltmines.

I am enclosing hand-drawn circuits of the mods which I hope may be of some interest should any other PET enthusiast attempt a similar exercise.

Having completed the hardware modifications it was then necessary to alter the contents of the 'E' ROM in order to use the new screen line width. I am indebted to a member of the local User Group for providing the necessary details. The new software also provides for additional keys on the keyboard, one a CONTROL key, the other a REPEAT key. Two new key switches are therefore added to the keyboard, one located either side of the space bar. This involved cutting the case to make room for the keys and drilling suitable mounting holes.

Further PET mods

Since I upgraded my PET to a dual standard 40/80- column machine, I have carried out further modifications to add yet more facilities. In my original 'Lament to PET' published in the newsletter back early in 1985, I requested information about the possible ways of adding an RS232 interface to the PET. No specific details were forthcoming so I investigated the possibility of adding my NETKIT interface in a more permanent way.

One of the fundamental problems was to decide where in the memory map it was possible to add a serial port. Netkit was designed to sit in the 4k slot at address $A000, but on my machine this is ocupied by a sideways ROM pager board. The $9000 slot is also occupied by a ROM pager board and both are switched by writing to the ROM area. This switching method precluded the possibility therefore of simply using one of the sideways slots, since to do so when outputting to the ACIA would also have caused the pager tc switch away from the Netkit.

A close look at the memory map after having done the 80 column mods showed that there is an unused section from $8800 to $8FFF. I decided

to try to use this area, but immediately discovered that the whole of the 2K bytes were not available via the memory expansion bus, and it was necessary to modify the address decoding to make it accessible.

Referring to FIG1, by cutting the track at A5 pin5 to isolate pin 5, and then linking pin5 to A5 pin3 the memory expansion bus is available from $8800 to $8FFF.

I then turned my attention to the NETKIT board itself. It was designed to plug onto the J9 connector and to connect to the ROM socket via a ribbon cable. Addresses, power, and data were transferred via the ribbon, while R/W and 02 were connected via the J9 connections. The original board offers a facility to plug in a GUEST rom and has a changeover latch which is switched by writing to $AF80/$AF81. The 6551 UART is addressed at $AF00/$AF03 with incomplete decoding. Addresses $A000-$AEFF are either the NETKIT software or the guest ROM software.

The easiest way to change it to fit the new addressing requirement so it would sit on the memory expansion bus was firstly to remove the Guest ROM socket. Short lengths of wire were then added to connect the holes in the PCB where the Guest socket had been to the relevant pins on the PCB side of the J9 connector. This extended the address lines to the J9 connector. The data lines were extended in a similar manner to a new flying connector to mate with the J4 connector. CS, previously connected via the ribbon cable, was now connected to J4 pin 16 (the SEL8 line), again via the flying lead. Power lines were extended back to the sideways ROM board sitting in the $9000 slot.

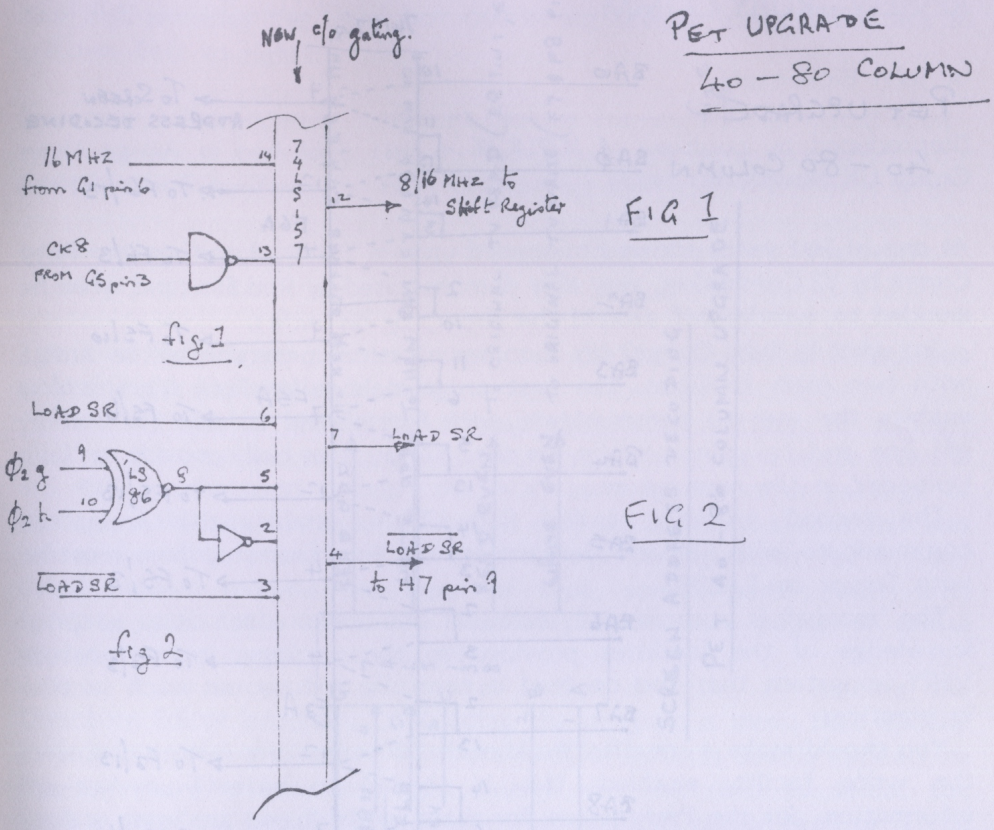
The hardware mods completed, the next stage was to amend the driving software. This task was achieved by borrowing the PROM programmer from the saltmines and squeezing the software into the address space between $8800 and $8EFF, amending jumps and addresses manually looking at a disassembled listing.

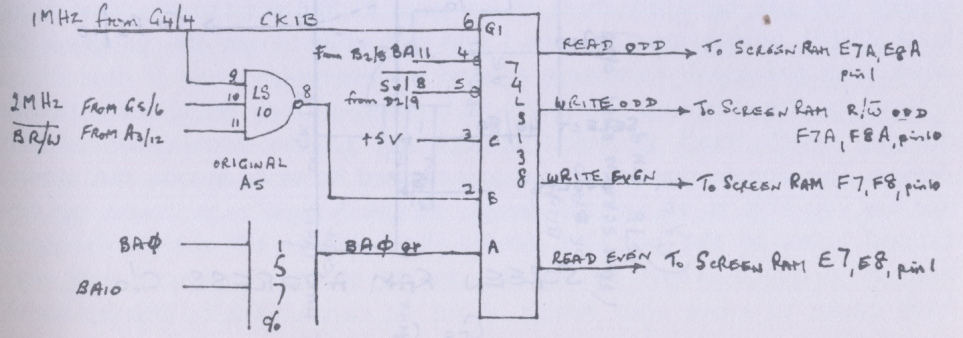
This latter task made me realise the desirability of having my own EPROM blower so I have now got my next project. . . . .

--oOo--

LATE NEWS - STAR NL10 Printer help

In Vol 9 No 1 (pp35-6) Alan Morgan, who reviewed the NL10 and offered to helpd with PDFs, etc, has moved. His address is now 41 Rock Farm Drive, Little Neston, S Wirral L64 4DY.

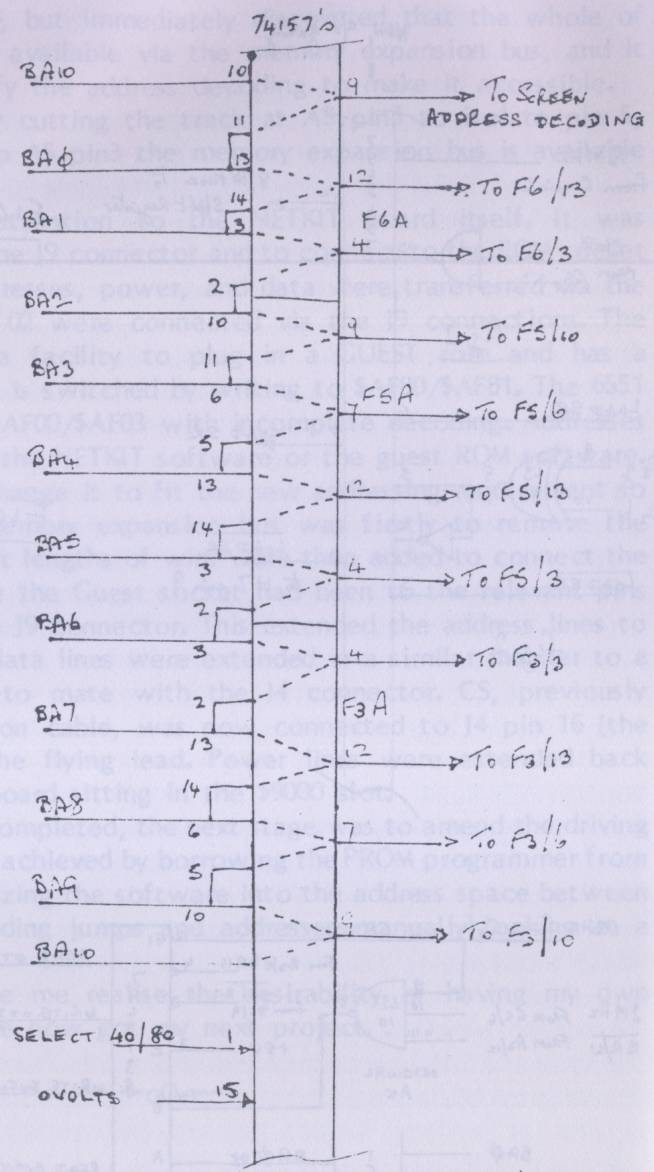



1MHz from G4/4
CK1B
2MHz FROM G5/6
R/W FROM A3/12
ORIGINAL A5
From B2/8 BA11
From B2/9
+5V
READ ODD → To SCREEN RAM E7A, E8A pin 1
WRITE ODD → To SCREEN RAM R/W ODD F7A, F8A, pin 10
WRITE EVEN → To SCREEN RAM F7, F8, pin 10
READ EVEN → To SCREEN RAM E7, E8, pin 1
BAØ
BA10
BAØ or

SCREEN ADDRESS DECODING

fig 3

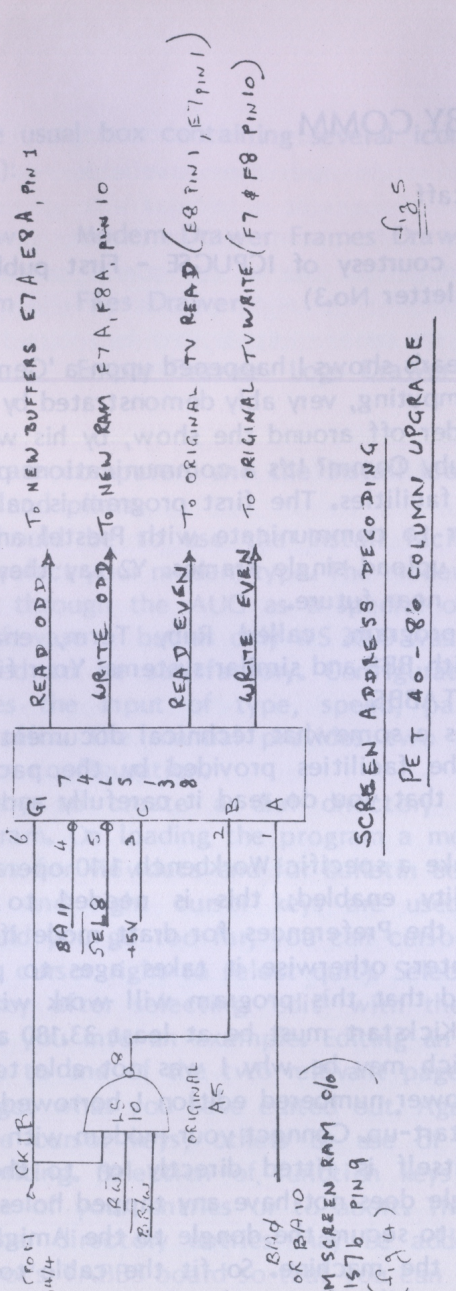
PET UPGRADE
40 - 80 COLUMN



SCREEN RAM ADDRESS C/O

fig 4.

(NEW 74157's FITTED ON TOP OF EXISTING F6, F5, F3)



REVIEW—RUBY COMM

by John Bickerstaff

(Reproduced by courtesy of ICPUGSE - First published in Amiga Users Group UK Newsletter No.3)

At one of last year's shows I happened upon a 'Gem' of a program - Ruby Comm by Y2 Computing, very ably demonstrated by Rod Eva (and when he decided to wander off around the show, by his wife).

So, what is Ruby Comm? It's a communications program for the Amiga with two main facilities. The first program is called Ruby View and it enables the user to communicate with Prestel and to edit (in colour) off line and to upload single frames. Y2 say they will provide a 'Bulk Uploader' in the near future.

The second program, called Ruby Term, enables the Amiga to communicate with BBS and similar systems. Your first stop here must be with Trevor on TABBS.

The 'manual' is a somewhat technical document which assumes prior knowledge of the facilities provided by the package. It is therefore VERY important that you do read it carefully and try out each section in practice.

You should make a specific Workbench 1.10 operating system disk with the write facility enabled; this is needed to enter your 'set-up' information. Set the Preferences for draft mode if you are using a dot-matrix type printer; otherwise it takes ages to print out a frame on line. I understand that this program will work with the 1.20 operating system but the Kickstart must be at least 33.180 and the Workbench at least 33.470, which may be why I was not able to get the program to work with the lower numbered edition I borrowed.

Now for the start-up. Connect your modem with an RS232 cable to the dongle, which itself is fitted directly on to the serial port of the Amiga. The dongle does not have any tapped holes to secure the cable, nor are you able to secure the dongle to the Amiga, as it covers up the tapped holes on the machine. So fit the cable to the dongle first and hold it in place whilst fitting the dongle to the Amiga. If you ever have cause to move your Amiga about be careful not to disturb these connections.

If, like me, you have your equipment controlled by separate switches, which grow like Topsy, then make sure you switch the modem on before loading your Ruby Comm disk.

The disk provides the usual box containing several icons. These are as follows (left to right):

Top row	Ruby-View	Modem Drawer	Frames Drawer	Install Icon	
Centre row	Ruby-Term	Files Drawer			
Lower row	Directory editor	Empty Drawer	Logs Drawer	Trashcan	

The two Ruby icons are computers and the install icon is a tool box containing a hammer and pliers.

The first action should be to use the install facility. So double-click on the icon and select your modem type. The modem in use was the WS 4000 - purchased through the AUG as a special offer package of modem, cable and software - but as only WS 3000 was shown this was selected - this proved to be satisfactory. Configuration for a non-listed modem requires the input of type, speed, parity, wait, init, format, prefix and suffix. The manual provides two pages of useful explanation on modem configuration.

Next it is necessary to create a dial directory by running the Directory Editor program. On loading the program a menu that already includes sample entries for viewdata and for bulletin boards appears on the screen. The left and right cursor keys are used to select the facility required (should you go too far, you can cursor back or if you want to quit you can cursor right to select quit). Selection is made by pressing the return key after selecting 'edit' with the cursor left or right keys which puts you into an example. Editing an example is not difficult but reference to one of the two relevant pages in the manual could help if you forget what you have edited out. Again, selection of some items is by the cursor keys, others by use of the backspace/delete keys and re-writing. Selection of function keys enables you to select the acceptance of your entries or to abort. Then select 'ADD' and press return. Other directory entries may be added, but do not forget to include Trevor's TABBS board so that you can keep up to date with the group's activities between issues of the newsletter. TABBS number is 0533 550893.

Now it is time to get down to business. Select either Ruby-View or Ruby-Term. Let's try Ruby-View first - to change over after using one of the Ruby programs it will be necessary to reset by pressing CTL and both Amiga keys; otherwise you will invoke the dreaded guru meditation.

The Ruby-View program takes a while to load, which the manual does warn you. Six menu strips are then available - System, Online, Edit, Display, Grab and Printer. It is necessary to go to the system menu to get started. You could choose either Display or Edit to play around a little, and to make full use of the screen select Small. You can then position the frame to the right or left to allow either the other off-line display or the online display to be placed next to it. This just fills the screen as you might expect (two 40-column frames fill one 80-column frame).

Frames may be saved in two ways. One is to save to disk individually; the other is to use the LOG feature. This is a useful feature if you want to select several frames and bring them up later when off line (or browse through before logging on again). There are two ways to 'log' save: by selecting through the drop-down icons, or by clicking on LOG in the keypad icon, but do not forget to add .D-LOG or .S-LOG or .P-LOG after the title you select. The D stands for Dynamic and this saves everything including the cursor, S stands for Static which stores the final screen and P stands for Print storage which allows for draft printing only. I normally use the latter for speed of printing and only use the D type when I need to edit and upload the revised frame(s). This I am allowed to do as an editor on Club Spot.

If you need to store separate frames these can be separately filed under a specific title - but do not leave spaces between characters in the name. It can be useful to print out such frames as they are being saved since storing to disk does take a few seconds and a printout can be made whilst this 'saving' is going on.

When a record is to be filed - sorry, a frame is to be saved - and either the LOG or the frame SAVE facility is selected, a 'requestor' appears. To title your frame the arrow Icon must be pointed at the name slot and the left mouse button clicked - delete the frame number if not required - and your chosen title typed in. When the name is complete, move the pointer down and click again to save the named frame.

To call up a frame, open a file, or a log file, and click on one of the arrows until the required title appears. Click on this title and then select, again with the left button. The frame will appear in the relevant frame on either the Display or the Edit screen. If you have chosen the Edit menu, the frame may be edited prior to sending when on line or saving.

However, sometimes the cursor does not appear in the edit frame and it is a matter of guessing where it is by using the full stop and then back spacing to replace the over-written character. Editing is very

difficult when this happens and when this edited frame is sent online it sometimes causes the cursor to run continuously from top to bottom of the frame and back to the top. It is only possible to stop this by pulling out the plug, literally! Good news!

I have learnt how to magic the cursor back - simply press control 'q' and back it comes. Apparently when a frame is saved to disk or .D-LOG saved, the cursor is also saved (and if it is blinking well off it is saved that way). Thanks Rod for this simple solution to finding the cursor.

When in the Display mode it is possible to examine the display control codes, and this is important should you be an editor. This package does not allow editing on line, which is not really surprising since this is not a full 'editors' package. Y2, I hear, are designing a bulk uploading facility that should prove very useful to editors.

Upon opening an on-line window the Dial Directory appears and you select the number required by clicking within the directory selected - all other functions are inhibited until a link has been made (alternatively the number can be dialled on the screen keypad). SHould it not prove possible to connect, 'NO CONNECTION' is indicated and the the Dial Directory will re-appear.

Once on line, you can proceed as usual, using the screen keypad, the arrow icon and the left mouse button. Alternatively, use can be made of the keyboard keypad where the '.' key provides the '*' and the enter key provides the hash (#). When 'on line' the arrow icon and the left mouse button can select number(s) from the on-line screen (a very useful feature). Do not forget that the # (the shifted 3 on the top row of keys) provides the '£' sign when you are operating on viewdata systems. The system 'preference' option allows sending either a Mailbox or a full frame from the edit window; it defaults to Mailbox on start up. Remember that most Mailbox pages on Prestel offset the first character, so start your messages with a shifted space which shows as an outline square.

The SAVEing of a frame when on line can be directly onto the disk or to the edit window if this has been invoked (or both if you wish). This enables a reply to a Mailbox to be made with the incoming message on view on the screen at the same time, a useful feature.

Printing when on line is only in draft mode from the on-line frame. Using the edit window allows the printing of graphics but this slows down the operation of the Amiga and is best done when NOT on line.

Doodle is an interesting feature which is only available in the edit

window. This allows freehand drawing using Viewdata graphics. Pixels can be 'set' or 'cleared' using the mouse. This feature does not overwrite any control characters nor any characters that are not on a graphics line.

Grab is another feature available from within the 'edit' window. Assuming you have just received a Mailbox message which is showing in the on-line frame, you click in the edit frame and select 'grab systel' from the menu. Then point to the number of the sender of the incoming message from the on-line window and it will appear in the edit window - magic. Now you can compose your reply and send it off, using the 'send edit' facility. Grab can be used to get back to an "a" frame by selecting 'grab page number' from the menu then pointing to the page number at the top of the on-line window and pressing the left mouse button. Do not forget to start with the '*' and to finish by sending the hash.

Ruby-Term is the way to TABBS and other bulletin boards. It is a terminal emulator program and can be used for accessing electronic mail systems. Lear Siegler terminal ADM3A-type emulation is used. Parity, line feeds and echo are set when the directory is set up but these can be changed for the call being made once you are on line. During the call you can turn the printer on or off and open or close the save and the send facilities as displayed at the top of the screen. As with the Ruby-Term facility, as soon as the line is connected the time-elapsed clock starts so you know how long you have been on-line. Maybe one day it will be possible to write in detail on Ruby-Term.

Well, there it is. The first and, as far as I know, the only DOUBLE BILL communications package for the Amiga for use in the UK. No doubt Rod Eva of Y2 Computing and his merry band will produce other features and other programs of this type in the future. Meanwhile it is a good £150-worth of software, obtainable from 66 London Road, Watford. If you really wish to spoil yourself you could buy a colour printer to go with it, which can be obtained from 66 L . . . .

[This article seems to have been written before Y2 moved: for their latest address see Discount Corner - Ed.]

REVIEW—DOLPHIN DOS ON THE 64

by Ian Moran

[As Dolphin DOS is an important add-on for 1541 owners, we have decided to publish both the two following reviews, even though they overlap here and there - Eds.]

INTRODUCTION

The much maligned 1541 has created a healthy market for the supply of various utilities both to increase disk access speed and supply replacement commands for those either missing or badly implemented in the original Commodore DOS. The trouble with most of these disk turbos is that they do little to speed up commercial programs such as SUPERSCRIPT and SUPERBASE which incorporate their own loaders and require sequential/relative disk file access during use.

Dolphin DOS has been available for some time now from Evesham Micros and effectively converts the slow serial 1541 into a fairly fast parallel drive. Two versions of the product are available; one for the 64 plus 1541, or the other for the 128 plus 1541 in both 128 and 64 modes. This review applies to the 1541/64 version.

INSTALLATION

Installation involves the fitting of a substantial pcb in the 1541 and replacement of the kernal ROM in the 64. The latter can be tricky if, as in my own 64, the ROM chip has been soldered in place. This chip must be de-soldered and removed to be replaced with a socket (supplied) to accommodate the new ROM. A ribbon cable (exiting via the 1541 mains socket) connects the drive to the user port of the 64, and two smaller cables, one from the 64 kernal ROM and one from the 1541 pcb, terminate in switches to enable the disconnection of the hardware, necessary during operation of the tape unit. These switches are best permanently mounted on the casing of the computer and disk drive so some drilling is also necessary. Any readers still conscious at this stage deserve a strong cup of coffee!

The fitting of Dolphin DOS sounds daunting but is excellently covered in the booklet supplied. In fact for many users de-soldering of the kernal ROM may not be necessary as I am informed that more recent 64's have socketed chips.

One point which is not made clear in the manual, however, is that tape operation is possible if the hardware is switched out. The manual implies that the original CBM ROM must be replaced!

PERFORMANCE

The table that follows presents results achieved with Dolphin DOS switched in and out (normal):

TEST	D.DOS	NORMAL	SPEED INCREASE
SUPERSCRIPT 64			
Load main program	29s	120s	4.14
Load file (15 blocks)	5s	13s	2.60
Save file (15 blocks)	8s	17s	2.13
Scratch file (15 blocks)	2s	6s	3.00
Spell check (8 blocks)	75s	284s	3.79
SUPERBASE 64			
Load main program	30s	126s	4.20
Sort 664 records	694s	1231s	1.77
Match	19s	102s	5.37
Find	37s	193s	5.22
ZORK 1			
Load main program	18s	102s	5.67
1st move ("open m/box..)	8s	25s	3.13
BASIC			
Load (64 blocks)	2s	42s	21.00
Save (64 blocks)	6s	48s	8.00
Scratch (64 blocks)	3s	12s	4.00
FORMAT disk	20s	80s	4.00

Some programs such as FLIGHT SIMULATOR 2 and JET did not show such dramatic increases as above, others such as FAST HACK'EM required that certain parts of the hardware be de-selected before loading would occur. This de-selection is activated from the keyboard. No program has yet been encountered that required both the kernal and 1541 ROMs to be switched-off before loading. What is also very significant I feel, is that some programs such as SKYFOX which incorporate their own fast load routine, also show considerable decrease in load time.

FURTHER FACILITIES

Faster disk access is only part of the story with this hardware fitted. DOLPHIN DOS also boasts the following:

Abbreviation of Commodore DOS commands e.g. 'LOAD "File Name"' replaces 'LOAD "File Name",8'; '@v' validates disk etc. Shift Run/Stop loads and runs the first disk file. Lock and unlock disk files against accidental scratching. Format disk as 40-track rather than 35, this gives 749 blocks free. Pre-programmed function keys for commonly used commands, built-in monitor (poor), hex/dec conversion, OLD command, user port centronics printer interface, enhanced screen editor. Interestingly, what is not mentioned in the booklet, is that the damaging protection present on many programs during loading is by-passed when using DOLPHIN DOS (also absent during disk formatting!).

CONCLUSION

All in all, a highly professional and reliable piece of hardware. I can only say that it has transformed my computer system especially when using SUPERSCRIPT and SUPERBASE. Previously I didn't use SUPERSCRIPT's spelling check option, it was just so slow (no fault of the program) now it's practically four times faster! It would be very interesting to compare the above figures to similar tests performed on the C128D. Highly recommended.

DOLPHIN DOS is available from Evesham Micros at a cost of £69.95.

REVIEW—DOLPHIN DOS ON THE 128

by John Broad

Who really needs real speed on their 1541? I suppose people like myself who access the drive regularly for business applications and some program writing. So it was with keen anticipation after many months' thought that I took the plunge and got DOLPHIN DOS from Evesham Micros.

This is not a cartridge that plugs in giving some speed increase but actual hardware boards fitted in place of existing chips in your 1541 and 64 or, in my case, 128.

A little patience is needed and of course some care; if, like me, you are not very brave, then you will take it to a local technician for installation. All components needed come in the small box with a very clear instruction booklet. There are even little test sections as you progress through the installation procedure.

I shall not go into the technical side of installation as I didn't do it; I shall just give a brief description of the speed increase this essential add-on has given me not only in loading and saving but all other disk operations including the time spent accessing them from the keyboard. The only things visible after installation are a wire and switch from the drive to switch DOLPHIN in and out; the same device from the computer to switch the new kernal in and out; and the cable connecting the drive to the user port.

There are a whole host of additional features apart from disk access including a built-in machine code monitor for us lot working in 64 mode; a range of screen editor commands; and some useful BASIC commands.

With the DOLPHIN kernal switched in (you have the choice), the DOLPHIN DOS message appears upon boot up. This gives one immediate access to the function keys which have been redefined as short cuts to disk operations as follows:

F1	List with return	F2	SYS$0 (jump to monitor)
F3	Run with return	F4	Verify with return
F5	LOAD"0:*",8,1	F6	SAVE"@: enter prog name
F7	display directory	F8	@x check drive status
F1+C=	list output straight to printer open4,4:cmd4:list:ret		
F3+C=	scroll forwards in monitor		
F5+C=	scroll backwards in monitor		
F7+C=	LOAD ,8,2		

Most other commands similar to quick disk are obtained using the @ symbol plus usually one other key, e.g. @v for validate. There are many short cuts to loading, such as shift + runstop key to load and run first file on a disk; or tap F7 to display a directory, run the cursor key to the file you want, and hit shift + run stop to load and run.

For those of you who want to obtain that little bit extra from your disks there is the facility to format up to and including track 40 with the simple command '@N:name,id+'; this will give you 749 blocks free per disk side, though of course such disks are only interchangeable with other DOLPHIN users. To format the normal 664 blocks, just omit the plus sign from the above command.

In the manual the following claims about speed are made:

load 202 block prog in 5 secs (5.9 inc search)
save 202 block prog in 10 secs (inc verify)
load seq files at 10X normal speed
save seq files at 8X normal speed

load and save rel files at 3X normal
scratch and validate at 6X normal
format 35/40 tracks in less than 20 secs (12/13 secs without verify)

Obviously any manufacturer is going to make claims about his product but below are my results from original and actual programs. The times quoted are the mean of three attempts in each case.

Full format 35 tracks with verify on	18.02 sec (664 blocks)
Full format 40 tracks with verify on	20.18 sec (749 blocks)
load 185 block prog (47K)	05.08 sec
save 185 block prog with verify	10.03 sec
scratch 185 block prog (47K)	04.39 sec
validate ICPUG PD disk 1 (6 blocks free)	16.06 sec
Load Superbase (128)	34 sec
Load Superscript (128)	35 sec
Load Swiftcalc (128)	15.8 sec
Load EasyScript (64)	17.27 sec
Load Print Shop (64)	14.7 sec
Load Newsroom (64)	12.7 sec
Load Superbase (64)	27.64 sec

The delay in the products from Precision accounts for the time the system needs to go through their terrible head-banging protection methods but on my 1541C these are reduced to audible clicks rather than invoking the Richter scale. The speed of the spelling checker in S/script is also greatly increased.

The price of DOLPHIN DOS is £69.95 and on a scale of 0 to 1 I give it 9; this is the best utility I have purchased to date and when you compare it with the 1571 - well, I'll let you 1571 owners check your speeds against the above. I actually upgraded my 1571 to a 1541 plus DOLPHIN and have not looked back. By the way, file loading and saving are also greatly increased from within the SUPER progs.

The only other add-on I am likely to consider is the 20Mb hard disk launched at the Hanover fair for the 64 with DOLPHIN: I can then have the best of both worlds.

--oOo--

KEYBOARD RECONDITIONING ON THE 128

by Barry J Oliver, CHN Analysis Ltd

(reproduced, by courtesy, from ICPUGSE March 1987 Newsletter)

This little note is to bring good news to all those of you who are having trouble with keyboard bounce, i.e. two or more entries per keypress. A fast and relatively cheap solution is readily to hand.

I have two trusty old CBM 3032s, one at work and one at home. They have received approximately equal use over the years. Whereas the one at home is still in perfect condition, the 'work' one has slowly developed keyboard bounce over the last year or so, the condition suddenly changing from chronic to acute. The only difference between them is that the 'work' 3032 was in a room severely smoke-logged by a fire elsewhere in the building in 1982. Presumably the effects of slightly corrosive deposits have slowly caught up with us.

Too many keys seemed to be affected for individual key cleaning or replacement to be contemplated. A little reading around showed that Supersoft are very supportive of Commodore users, so I phoned their managing director, Peter Calver. He indicated altemative approaches:

a) purchase a complete new keyboard at £140, and have quite a long wait for it to be imported; or

b) have a service/exchange keyboard at £40 and one week's wait. The keyboards are completely stripped down and cleaned in an ultrasonic bath. All defective parts are replaced and the keyboard rebuilt to original specification. I leamed that the various parts in the Commodore keyboards are standard parts that are likely to be readily available for many years to come and are not, as I had feared, Commodore specials in short or non-existent supply.

We went for the latter option. Removal and replacement of the keyboard from the 3032 is very easy. You need remove just one plug on a flying lead, and 12 hexagon-headed self-tapping screws. The plug has an insert in one hole so that it cannot be replaced on the pins backwards, but it would be a wise precaution to note the orientation of the plug anyway, as our insert was none too secure. We sent our keyboard off and received the service exchange board in 6 days. I installed it, and it works perfectly, good as new.

My only complaint is that you do get somebody else's keyboard back, not your own, and our replacement has some of the keys lightly scratched where someone has been poking them with a not-so-blunt instrument. It is of course the service exchange principle, rather than

individual servicing, that enables the rapid tum-round and low price. With the slight proviso above, the service is highly recommended. Presumably Supersoft offer a similar service on other Commodore keyboards; their address is: Winchester House, Canning Road, Harrow, Middlesex. HA3 7SJ; telephone 01-861 1166.

--oOo--

Comment

I hate to do Peter Calver out of a good source of income, and no doubt the job he does is much more thorough than that described below, but if you are not keen to shell out £40 and wait 6 days, you can probably do an adequate job yourself in 15 minutes. Alf Minter originally told me how, at a time when I was regularly paying £60 for new keyboards after about 18 months of steady use. 'Since then', in the adman's words, 'I have used no other [method]', and I have described the process before in this Newsletter.

We find that bounce is purely a function of time, not of environment: with an operator keying for 37 hours a week, it used to develop after about 18 months from new; after refurbishment as described below, it would develop again every 2-3 months. On my personal system, used less intensively, I could go 6-12 months without recurrence.

The problem is caused by the contact pads under each key becoming bumished. After disassembling the keyboard as above, if one unsolders the two wires from the projecting terminals of the Shift/lock switch and then takes out a lot more tiny screws, the circuit board lifts off the underside of the keys (and can be cleaned for good measure) and the basic fault is at once visible. The central contact pad of any key that is 'bouncing', and of many others by this stage, will be seen to be shiny and striped with the negative imprint of the conductors it has to connect on the circuit board below.

With a piece of very fine sandpaper, or a manicure 'emery board', the bumished pads can quickly be restored to a 'suede leather' appearance. For good measure I usually swop the worst ones ('a', 'e', 's' etc - they are freely removable) round with less commonly used keys like 'z', '@' and so on. Another ploy is to rotate the pads by 90°. The whole job takes about 15 min once one is used to it.

What is so enraging is that it would be equally quick and obviously more satisfactory just to replace whole set of contact pads, which must be worth all of a quid the lot if only one could get them.

HdeG

DIY AMIGA PRINTER CABLE

by Jim Kennedy

The purchase of a new Amiga probably leaves most members a little short of the proverbial readies so buying things like an MPS 1000 printer may have to be postponed for anything from a few weeks up to many months. However, if you have an old Centronics printer you can save yourself a few bob by making it work off your Amiga. You'll need a 25-pin D connector to Centronics connector cable. You could buy a ready-made cable but then you must ensure that certain lines are NOT connected. In particular, pin 23 on the Amiga Parallel Port supplies 5 volts which could damage some equipment as Chapter 7 of your Introduction to Amiga manual warns. I decided to construct my own cable.

Since I had a Juki 6100 daisywheel printer that I used with my 128D (and still do) I sat down with a friend knowledgeable about computer hardware, Paul Duane. (Paul is the only person I know of ever to have home-built a A0-size plotter - yes, that's right: it makes plots up to 3 X 4 feet - running off a VIC 20!) We deciphered the differences in terminology between the 25 pin parallel port in the American Amiga manual and the 36-pin Centronics port in Japanese Juki 6100 manual. Most of the connections are obvious but how the words PRIME and RESET came to mean the same thing is beyond me. Anyway the connections we settled on are listed in the table that follows.

I purchased the necessary parts from my local Tandy store. The parts required are a 36-pin Centronics male plug complete with cover which will go into the printer; a 25-pin D connector female socket which fits the Amiga parallel port; a separate cover for the 25-pin socket; and a length of 25-conductor ribbon cable. The length of ribbon cable obviously depends on how far your printer is from your Amiga. Tandy sells it both in 5 ft packages and 25 ft spools. Since I needed 15 ft I bought a 25 ft spool but most members will probably need only the 5 ft package keeping the cost down to about £12 for the lot.

Cable construction is a fiddly task; a couple of tips are in order. First, it helps to have something to hold both the cable and the connector while soldering. Second, after soldering, roll the 25 conductor ribbon cable up to make it fit through the oval outlet in the Centronics connector cover.

After making up the cable, the only change I had to make with the DIP switches in the Juki was to set switch 1 (Automatic Line Feed) to OFF. Using VizaWrite Classic 128 with the Juki it is a simple matter to

change the Line Feed setting in the VizaWrite Printer Setup window if required. Superscript worked with the Diablo Printer Definition Defaults File as written but don't forget that Unit Number has to be set to 0 for Centronics rather than the 4+ used for serial printer operation. By way of information, I use the Centronics-to-C128 cable made up by Mick Bignell and sold by Viza Software for my 128D to Juki connection.

My printer now works with either the 128 or the Amiga by just plugging in either computer. A 15 ft custom cable would have cost me an arm and a leg.

AMIGA PARALLEL TO CENTRONICS PRINTER CABLE WIRING TABLE

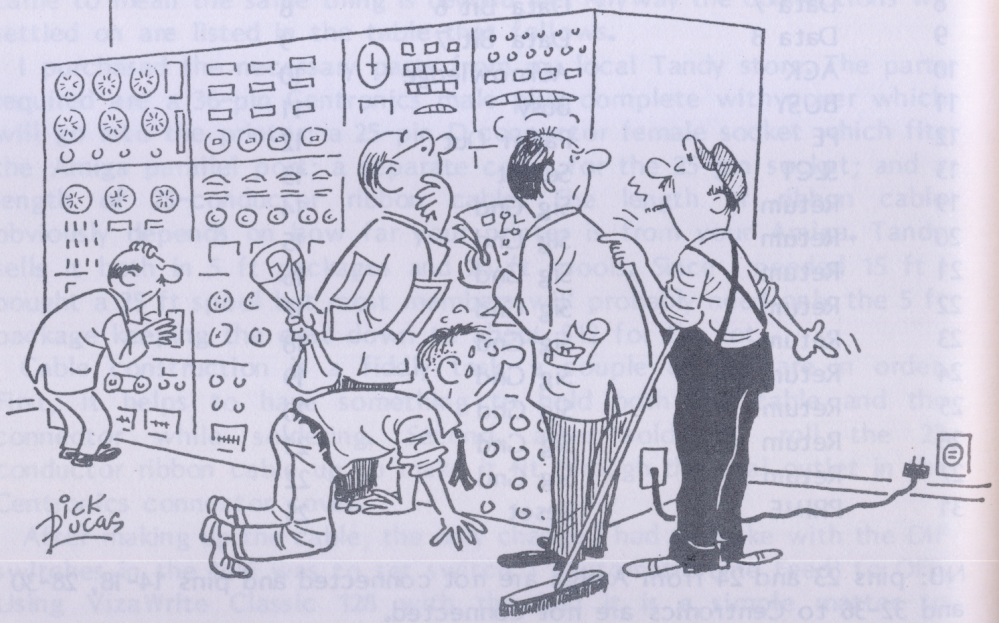
Centronics 36-pin (Juki)		Amiga 25-pin parallel port	
PIN No	NAME	NAME	PIN No
1	STROBE	Data Ready	1
2	Data 1	Data Bit 0	2
3	Data 2	Data Bit 1	3
4	Data 3	Data Bit 2	4
5	Data 4	Data Bit 3	5
6	Data 5	Data Bit 4	6
7	Data 6	Data Bit 5	7
8	Data 7	Data Bit 6	8
9	Data 8	Data Bit 7	9
10	ACK	Acknowledge	10
11	BUSY	Busy	11
12	PE	Paper Out	12
13	SLCT	Select	13
19	Return	Sig Gnd	14
20	Return	Sig Gnd	15
21	Return	Sig Gnd	16
22	Return	Sig Gnd	17
23	Return	Sig Gnd	18
24	Return	Sig Gnd	19
25	Return	Sig Gnd	20
26	Return	Sig Gnd	21
27	Return	Sig Gnd	22
31	PRIME	Reset	25

NB: pins 23 and 24 from Amiga are not connected and pins 14-18, 28-30 and 32-36 to Centronics are not connected.

The Commodore Diagnostician

New from Australia,
a double sided laminated, symptomatic chart for diagnosing faulty IC's on the Commodore 64/128 and peripherals.
This chart contains 66 variations which can help you locate a faulty chip for replacement and is an invaluable tool for those that want to do their own repairs and save money and down time.
Other features include an important hint section, pictorial layout and suggestions on where to buy low cost chips. This chart is definitely a must for the Commodore computer enthusiast.
Reference Guide #4 for C64/1541 - £5.75 includes posting
Reference Guide #5 for C128 - £6.50 includes posting

Exclusive Worldwide Distributor:
KASARA MICROSYSTEMS, INC.
33 Murray Hill Drive, Spring Valley, New York, 10977, USA
914-356-3131; Telex No: 137068; Fax No: 914-425-2708
Send for Complete Catalog



SOFTWARE LIBRARIES

There are a number of changes to the software organisation this month, so I would ask members to check the back pages before sending for library material.

The main changes are as follows:

VIC - All material (disk & tape) from Joe Griffin
C-64 - New Copier for Germany/Forces: A.R. Perkins
PC - New Organiser: Tim Amot
Amiga - New Joint Organisers: Archie Clark & Peter Miles
- New Copier for ICPUG Disks: David Annal

I would like to record my thanks to Brian Wise, Peter Reynolds and Mike Todd for all the work they have put into the libraries during the past few years.

The C-64 Library is now under scrutiny so please keep an eye on the next newsletter for warning of changes.

DPG

C128 Library

A further two disks have been added to the C128 library, making the total number of disks available a very healthy 18. Remember, details of ALL the disks available from the library are on disk C1 - get it now! All disks are available from the librarians listed at the back of this newsletter. Please send your requests to the correct librarian as this saves a lot of time and trouble.

The new disks available are:

M1 - A collection of all the miscellaneous programs taken off the general program disks.

S4 - A 40-column version of Superdesk(S1).

Please note: The S1 disk has been reissued as version 3. This version removes some of the minor bugs known to be in the original versions.

TH-S

DISCOUNT CORNER

Please refer to pages 82/85 in the January/February issue for general information and pages 203/204 in the March/April issue for more discount details.

Telephone calls. Please call me after 8.30 pm and before midnight. If I should be out, please leave your name, 'phone & membership number and brief details of your requirements on the answerphone - I will call you back at your home later.

Arithmos, 4 Hart Street Lane, Edinburgh, EH1 3RN - tel 031-557 242 - contact Martin Lowe - have just opened The Amiga Centre of Scotland. Please see their advertisement in this issue. A new program for the Amiga called Rat Tracer is now available, written by Eric Graham, who produced The Juggler. This program enables you to create your own pictures and costs £10.0 plus VAT. Ring Martin Lowe for information, details and discounts.

Cockroach Software. This company, whose Turbo-ROM was reviewed on pages 178/9 in the March issue, will supply it at the discounted price of £15.00 including postage & packing - RRP £19.99. Orders should be placed through me. Send your cheque made out to Cockroach Software (endorsed on the rear with your membership number and your address please), with your written order and an 18P stamp to me.

Database Software. Brief details were given in the March issue on page 203. Mini Office II is available at £16.95 on disk (RRP £19.95) or £13.95 on cassette (RRP £16.95) to members when order through me. Send your cheque, made out to Database Software Limited and endorsed on the rear with your membership number and your address, with your written order and an 18p stamp to me. The program will be despatched to you directly from the software house.

Digital Solutions Inc., programs are available through me at a discount of 25%. These programs include Pocket Writer, Planner and Filer retailing at £39.95 each for the C64 edition and £49.95 each for the C128. The Dictionary retails at £19.95 for either machine. Make cheques out to Haba Systems Ltd, for RRP less 25% plus £1 for post for each program; send to me with your written order and an 18p stamp.

George Thompson Services Ltd, suppliers of JUMPDISK in the UK have advertised in this issue. It may be possible to sell this product at a

reduced subscription to members in the future, depending on the VAT man and other things so please watch this Corner for news.

Kasara Microsystems Inc are advertising in this issue Reference Guides No 4 and No 5 for the 64/1541 & 128. Kasara are Commodore US authorised distributors and suppliers of Commodore custom chips. You may wish to contact them for realistically priced chips.

Modula 2 are offering to members, until the end of June only, a special discount on their three programs. The standard program has an RRP of £99.95, the developer's pack an RRP of £149.95, and the commercial pack with source an RRP of £299.95. Call me for details and how to place your order.

Software Specialists, previously available on Compunet should now be contacted at 26 Fitzroy Road, Bradford Moor, Bradford BD3 9PD. See page 203 of the March issue for their products.

Repairs to your VIC20 or C64. Member Derek Hoare of 29 Shackleton Rd, Tilgate, Crawley, Sussex, telephone 0293-542823, is able to assist members with faulty equipment and parts at reasonable prices. Write (or telephone in the afternoon) to advise him of your difficulties.

Timeworks products are now obtainable from Cavendish Commodore Centre in Leicester - see their advertisement in this issue for address and telephone number. Cavendish offer 10% discount and free p & p.

Y2 Computing Ltd., have advised that their Ruby Comm software has been upgraded so that it can be run on the A2000 Amiga. Please note that Y2 have moved to 111 St Albans Road (from 146) and that their new postcode is WD1 1RD. Their telephone number has not been changed.

--oOo--

GREAT MINDS . . .

The Chairman of the Colchester Computer Society (himself an ICPUG member) has written to us that exception is being taken in Essex to our new cover, which is nothing more or less, in local opinion, than a tarted-up version of theirs. Judging from the sample sent to us, this is a fair comment, although we don't imagine anyone involved with our new cover had ever seen theirs. Whether in outrage at this plagiarism, or because they were bored with it, the Colchester Club is now running a competition for a new design! (Henry suggests that we enter their competition with our old cover . . . .)

READERS WRITE . . .

VIZAWRITE BACKWARDS

David Emley wonders if it is just his version of Vizawrite that has a problem. He writes from 127 Harpfield Rd, Stoke-on-Trent ST4 5LT:

I am writing this after reading Nick Higham's review of Viza Write Classic 128 in the last N/letter. I echo his enthusiasm for VW but I have found one serious problem and, as no one else has commented on it, I wonder if it is just my version of 1.53 that has a bug in it. The problem concerns block move: moving a block of text forwards is fine but trying to move one backwards is a right pain, especially in a large document. You can't use the function keys to skip a page or screenful and scrolling backwards is very slow at the best of times. Has anyone else experienced this?

VIZASTAR SIDEWAYS

GB Snelling writes from 91 Oakfield Rd, Newport NP9 4LP to say that Jim Kennedy and Viza have got it all wrong:

In his review of 'Sideways' (p138, last issue), our Chairman said he understood from Viza that Sideways is not compatible with Vizastar, though he had not verified this himself. Since Vizastar users are probably just the sort of people who will need Sideways, may I correct him/them?

The 'Read Me' file on my Vizastar 128 disk tells me that, if I print a file to disk, '. . . then programs such as Sideways . . . can be used to print out this file'. I contacted Timeware and found that even they did not think their program would run with Vizastar, but I took a chance and bought it to try. To my delight it ran first time with no difficulty at all, giving excellent and flexible printouts (except that, like Jim Kennedy, I couldn't print a # sign - I got a ':' , not a '#'. I am using a C128D with an additional 1571 as drive 9; Epson LX80; Vizastar 128; and Timeworks' 'Sideways 128'. I would imagine Sideways would not work with the C64 versions of Vizastar, but I have not checked this.

On p204 of the same issue, Discount Corner advises us that Timeware Ltd have given up distribution of Timeworks products. They wrote to me that Timeworks Software is now distributed by Electric Software, Unit 8, Cromwell Business Centre, New Rd, St Ives, Cambs PE17 4BG (tel 0480 66433). As an added bonus, my Sideways disk is not protected, so I am able to keep a backup copy.

Charles Hooker, Dar-es-Salaam, Beeches Park, Hampton Fields, Minchinhampton GL6 9AZ writes in similar vein:

I have had Sideways for about 8 months and I use it with Vizastar 128, so I am at a loss to understand the remark that Viza say it is not compatible with Vizastar. The Vizastar manual says it can be used (p9-8). Sideways will work with any program that can print a true ASCII file to disk. If you have set your printer width to 80 columns and you have a spreadsheet wider than 25 columns, then you need to create another file or files. This is no trouble, however. You have to set the paper width to 999.

I would confirm the remarks made about Dimension's C64/128 printer buffer. It has enabled me to increase my output by about 50%. I would recommend anyone with a high print output to invest in one, preferably the 64K model - the difference in price is

negligible and you take no risks of damage in adding chips yourself. My total buffer capacity is 76K, including 4K in Super Graphix and 8K in the printer. This means I can output about 18 A4 sheets at one time without tying up the 128.

Finally I would endorse your review of Viza Classic. I found 'Jim's Jottings' most interesting - you are doing what I would love to do - install a laser printer. I await the results with impatience and interest.

• Your impatience and interest will be partially satisfied by this issue. Next issue we hope will be 100% laser-printed.

REQUESTS & SUGGESTIONS

Ted Cachart (G0DFR), Rose Cottage, 34 Bolehill Rd, Bolehill, Wirksworth, Derby DE4 4GQ seeks information:

Can anyone provide a circuit to convert 8096 monitor screen signals into a Composite Video thus enabling it to be used as a monitor with a C64 (or dare I say a BBC?)? Secondly, if any member is using an 8096 or 4032 for RTTY AMTOR CW or PACKET, would they please contact me.

Old PETS never (or seldom) die, they are often sold off to newcomers to computing who would benefit from the many hints and tips that have appeared in previous Newsletters. How about a PET PAGE (no Comers left) reprinting selected articles and asking membes to submit others that we all know about (or do we?).

One tip I modified for my own use is the use of a shifted space and colon in the prog name when saving to disk, e.g. 'dsave"progname<shifted space>:" '. This will appear in the directory as '27 "progname": prg' and all you need to do to load it is to overtype the block count with dS (and a space to eliminate any other digit) and press Return.

AMRAC (Amateur Radio and Computers) is a club that has expanded very fast over the past 12 months, increasing membership by some 700% to just over 700 members. Their Newsletter is published bi-monthly and a 'Hot News Sheet' in alternate months. Would the Committee consider an exchange of information between the clubs. This could simply be achieved by exchanging Newsletters with an agreement that any article could be reproduced. I am sure many members of both clubs would find selected articles of interest - well, Mike Todd would, anyway.

• The suggestion is hereby passed to the new Committee and incoming Editors.

AMIGA SIG?

Michael Clarke, of 82a High Str, Beckenham BR3 1ED, is worried by the existing Amiga SIG:

I am sure there must be many Amiga owners/users who are disturbed by the fact that the only special interest group in this country that they can join is run by a commercial organisation, whose employees act as non-elected officials.

Would anyone who is interested in helping to form an Independent UK Amiga Users' Group (possibly, but not necessarily, associated with ICPUG) write to me with their views. If there is sufficient interest a meeting can be arranged.

GENEALOGICAL INTEREST

R Tester, 49 Meadow Close, Farmoor, Oxon OX2 9PA, responds to Stephen Farrer's trawl for interest in genealogy (Letters, last issue):

I would like to record a vote for a genealogy SIG. I, probably like many others, would like to find out more about my forefathers but haven't yet bothered. Computer owners now have such a wonderful opportunity to collect the necessary information and to store it either in S/Script or S/Base and exchange it if required. Anything that encourages interest in any form of hobby is most welcome. Let's hope the next issue carries some good news.

• Alas, this is the only expression of interest that has come to our notice. Possibly others wrote direct to Stephen.

LOBBY REQUESTED

M Reynolds, 75 Chapman Ave, Maidstone ME15 8EL, wants us all to lobby the BBC:

I noticed recently in a general computer magazine a request for readers to write to the BBC asking for a new series of 'Microlive'. Could ICPUG help in this matter? Perhaps a separate pre-printed letter to the BBC could be included in the next Newsletter: if half the membership signed it, that would represent a significant demand for the programme.

• Might such a solution not rather lack spontaneity? Would it not be better for all those remotely interested in seeing Microlive reappear to write independently to the BBC after reading this?

GWENTISH ISOLATION

WA Cheek, a newish senior citizen member in Gwent (372 Caerleon Rd, Newport NP9 7LT) is feeling computer-isolated:

As a new member I was disappoined not to find any regional contacts in my area in the first magazine I received. Is there any regional activity in Gwent or any other member in a similar age group with whom I could exchange information on the C64 and, preferably, machine code? I would also like to get some listings in machine code - I have tried but so far failed.

Is there anything I could do to help with the many jobs you have?

• Well, there's Geoff Snelling, obviously, but we don't know his age. Perhaps the Regional Organiser will help when he sees this letter (perhaps he has already seen a copy and done so). You should be in touch with Fred Offler about machine code (he is another of us oldies). Thanks for the offer of help.

SUCCESSFUL APPEAL

The RAFT Training and Placement Officer writes, a propos our notice (p164 last issue - with Ms Worsley's name spelt wrongly) of their need for gifts of unwanted equipment, that ICPUG member Fred Shaw of Prescot, Merseyside turned up trumps and donated them a 2001 PET and all sorts of bits and pieces that are already proving a benefit to the Centre. She thanks us and him. Anyone else with any spare hard or software - it will be very gratefully received.

BRICKBATS DEPT

JH Mitchell, of Marlborough, does not think too highly of the balance of the Newsletter. He is also quite allergic (we don't blame him) to that overworked bit of ICPUGspeak 'shooting oneself in the foot', and with some acerbity points out that the editorial staff are quite good at this, as last year's issues included two No 2s and two No 5s, according to their Contents pages. We are embarrassed and suggest readers correct these errors in issues Nos 1986/3 and 1986/6. Obviously time for us to go.

PLEASE WOULD CORRESPONDENTS TRY TO SUBMIT ALL BUT THE SHORTEST LETTERS ON DISK? Keying in this lot was an unwelcome chore and we still have to do all the Ads. We are fairly used to it but have mercy on our successors! - Outgoing Eds.

LATE SALE AD

Superbase 64 unused £20; Easyfile £3; Logo disk and book £12; Forth ctrdge/4 books £10; Total health £3; Axis assassin £2; Critical mass £1.50. All for C64. Willing swop for Superbase 128 + cash adjustment. Norman, tel. 0245 283215 (Chelmsford)

FOR SALE & WANTED

C128D/2nd 1571 drive/Centronics interface/buffer/green screen monitor; much s/ware incl S/Base 128, S/Script 128, CP/M programs (assemblers, Pascal, comms etc). Programmers Refce manual/Digital Research manual. Programs ++. Exc cond, will not split. £650 ono. Brian, 0474 812523 (NW Kent)

C128/1571/1901 colour monitor/30 d/s d/d disks/Final Cartridge II/Micro Clerk/Oxford Pascal/many books - 128 Programmers Refce Manual; Hints and Tips, Anatomy of the 1571; CP/M refce manual, etc; dozens of games - Gauntlet, Marble Madness, Trivial Pursuit, Leaderboard etc. Original packing £850 ono. Steve Woolgrove, 0602 602081 (Nottingham)

C64/1541/MPS801 printer/C2N Datassette/Joystick/Mikro assembler cartridge. All fully working with manuals; disk, cassette, and cartridge-based s/ware included. £135. Sale as complete system only; buyer collects mid-Cheshire. Andy Hibbert 0565 812032 (home) or 0565 3800 x 3526 (work).

C64/1701 monitor/1541 D/D/MPS802 printer/C2N cassette/Joysticks, paddles/Currah Speech/Compunet modem/Easyscript/Books, s/ware, disks (cost £1350) £500 ono. M Reynolds 0622 676354 (Maidstone)

C64/1541/1530 cassette/Stack parallel interface cable and s/ware/Comal-80 cartridge/ Paperclip 64 word processor/MicroMagpie database/Melbourne House Forth+/various games and books. Will split. Offers to Julian Boardman-Weston, 0530 811719 (Leics)

SFD 1001 (1Mb) disk drive/Brainboxes Interface cable (64/128 switchable). Boxed, hardly used. Any repair costs guaranteed for 12 months. £250 ono. D Webb, tel. 0903 42334 (Worthing - evenings/weekends)

1541 drive £120 or £150 incl 50+ disks; CBM modem £30; Uniprint Centronics interface £10; various s/ware items including games and serious applications on tape/disk - phone for list 01-291 3108 (6-9pm) Mrs P Holman

4023 printer, new, boxed (kept as spare, never used) £150; two IEEE cables £15; Superscript II for 700/8050/8250) £40. Lionel Tun, 01-928 3065

PET s/ware on disk/tape, and other items, at GIVE-AWAY prices (member bought dealer's closing stock). Send SAE for list, Chris Wylie, 10 Heath Dr, Upton L49 6LF

Brain Boxes RS232 I/face & cable £30; 1541 drive £100; Shinwa CP80 printer & cable £100; 1701 col monitor £120; BC BASIC ctrdge (C64) £28. Sid Verber, 061-434 7412

C64 Mastercode Assembler/tape/manual, bk; Forth+, tape/manual; Oxford Pascal v2.1, dis/manual; COMAL crtdge/manual. £50, as one lot. Trevor Mason 0803 770446 (Devon)

Oxford Pascal C128 (disk) £5/Laser Genius C64 (disk) £8.50/Laser BASIC C64 (tape) £5/Gilsoft Illustrator C64 (disk) £3.50/White Lightning C64 (tape) £5/Micro Magpie d/base C64 (disk) £6/Disk Dissector C64 (disk) v4.0 £9.50. JH Pickford, 0625 75019 (evenings - Cheshire)

EasyScript (ESC64-40) disk/manual £25/Future Finance (FF64-40) disk/manual £25. Both brand new, for C64. Man Abbott, 01-689 5665 any time in the 24 hours.

WANTED

C64 Software etc; Superbase the Book; Future Finance; Supertype; Koalapainter; Action replay 2 + Diskmate 2 on same c/trge or similar; + other business items. Ken Casemore, 108 Prospect Rd, Farnborough, Hants GU14 8NS, tel. 0252 542772

CALC/PLUS cartridge manual for Plus4 - buy or borrow. Any other Plus4 spreadsheets? Marioj K Pathak, 01-356 4367 work/01-590 2215 (home)

SPRIINTER interface converter/buffer (IEEE-Centronics-RS232C) with cables. RJ Scarth 021-747 8305 (work) 0562 883649 (home) (W Mids)

Any ZX80 s/ware, h/ware, and especially books - buy/borrow. Also grateful any info wh/abouts Ron Bissell or Ken MacDonald, ex Macronics. M Davies, 0558 822509 (Wales)

ICPUG Software Libraries

Organiser: Joe Griffin, Clovelly, Lynwick St., Rudgwick, Horsham, W. Sussex RH12 3DJ

Please remember that the Libraries are operated on an entirely voluntary basis and, unlike many of the American User Groups, ICPUG DOES NOT CHARGE A COPYING FEE.

The Libraries contain PUBLIC DOMAIN programs from a wide range of sources, including our own members and other user groups. ICPUG DOES NOT SUPPORT SOFTWARE PIRACY.

Members may obtain ALL the library material. However, in order to retain a measure of control over the work-load imposed on the Librarians, we do restrict the amount of material that may be obtained on any one request.

Disk users may obtain up to two disk copies at a time (+4 three, Amiga five).
Tape users may obtain up to four programs, from any one disk.
(Please use a C-60 or VC-90 tape - a C-15 or C-30 may be too short)

To obtain copies of catalogue or library disks, please send :

A statement of what you want
Your membership number.
Disks (stating FORMAT - type of drive - required) or Tape
We will NOT use a disk as a 'flippy' as it can damage the disk drive.
Pre-addressed re-usable packaging suitable for return
There have been occasions when disks have arrived bent in half!
Please ensure that the packing is adequate.
Return postage - SEND STAMPS.
Overseas members should send International Reply Coupons
(allow at least one and a half IRC's per disk sent).

PET - Joe Griffin (see above)

VIC - Brian Wise, 17 Knighton Close, South Croydon, Surrey CR2 6DP
8050/8250 Joe Griffin - (see above)

COMAL - Brian Grainger, 73 Minehead Way, Stevenage, Herts SG1 2HZ

1520 Plotter - W G C Austin, School of Geography, Faculty of Humanities,
Newcastle Polytechnic, Lipman Building, Sandyford Road,
Newcastle upon Tyne NE1 8ST

1520 (Tape) : John Bentley, 38 Conway Road, Taplow, Maidenhead, Berks SL6 0LD

PC - Tim Arnot, Flat 3, 26/28 Osborne Rd, Southsea, Hants PO5 3LT

Please always send your requests to the librarian listed below who deals with the CATALOGUE CATEGORY of material you want. Catalogue from Peter Crowder - (see below).

A-D	David Murray, 8 Enticott Close, Tankerton, Whitstable, Kent CT5 3ET
E-O	Peter Crowder, 27 Crawford Drive, Liverpool L15 8AE
P-Z	David Harrow, 28 Phoenix Drive, Wateringbury, Maidstone, Kent ME18 5DR

Plus 4 (& C-16) - Richard Hunt, 45 Cumberland Rd, Bromley, Kent BR2 0PL

C-64 - Andrew Hartley, 83 Thornton Crescent, Wendover, Aylesbury, Bucks HP22 6DQ

Please send your requests to the librarian listed below who deals with the first letter of your surname.

A or D	Kenneth J Hill, 25 Mount Avenue, Rayleigh, Essex SS7 7HS
B	Fred Owens, PO Box 3241, RAF Mildenhall, Suffolk.
C	R Burns, 48 Grasmere Road, Royton, Oldham, Lancs OL2 6SR
E I J K	Mike Hingston, 1 Stafford Road, Eccles, Manchester M30 9HN
F G	Geoff Crowther, 60 Fleckney Rd., Kibworth Beauchamp, Leics LE8 0HE
H	David Miller, 38 Exeter Gardens, Ilford, Essex IG1 3LB
L N O	Nigel Corry, 4 Horsted Way, Rochester, Kent ME1 2XY
M	Ray Medford, 4a South Grove, Brooklands, Sale, Cheshire M33 3AU
PUVXYZ	Bill Hull, Rocklea, Pilling Lane, Preenall, Blackpool, Lancs
Q R T	Peter Crowder - (see PC Library E-O, opposite)
S	Brian Wise - (see VIC above)
W	Chris Wright, 37 Cecil Street, Lytham-St-Annes, Lancs FY8 5NN

Germany (including BAOR) JT AR Perkins, 11 Trenchard Rd, RAF Digby, Sleaford, Lincs

Overseas (other) & 8050/8250 Joe Griffin - (see above)

128 - Organiser: Tony Harrison-Smith, 150 Moreland Avenue, Benfleet, Essex SS7 4JW

Please send your requests to the librarian listed below who deals with the first letter of your surname.

A-C	Chris Wright - (see C-64 above) also 8050/8250 copies
D-J	Damien McEnroe, 11 Pentridge Cl, Eastfield Chase, Cramlington, Northumberland
K-R	Paul Smith, Egdon House, Nottington, Weymouth, Dorset
S-Z	Bill Gardner, 156 Henwood Rd, Compton, Wolverhampton WV6 8PA

Overseas Tony Harrison-Smith - (see 128 Organiser above)

Amiga - Archie Clark, 20 Middle Mead, Fareham, Hants PO14 3EG
& Peter Miles, The Queen's Armes Hotel, Charmouth, Dorset DT6 6QF

ICPUG Disks David Annal, 142 Windermere Rd, Norbury, London SW16 5HE

Non-ICPUG Amiga John Bickerstaff (see front cover) (up to 10 disks)